SUPPLEMENTARY MATERIAL: Deep Reinforcement Learning with Stacked Hierarchical Attention for Text-based Games

In the supplementary material, we describe the training details, examples of game interface and interactions used in the paper.

A Training details

We train our model using the Advantage Actor Critic (A2C) method across valid actions. Given \( s_t \), the valid action set \( \text{Valid}(s_t) \) consists of actions not leading to meaningless feedback (e.g., “Nothing happens”). Function to obtain the valid action set is provided by Jericho [20]. We denote all learnable parameters of our model as \( \theta \). After obtaining the state representation vector \( v_t \), we use a critic network to estimate the value \( V(v_t) \) and treat decoders for templates and objects as different policies: \( \pi_T \) and \( \pi_O \). We first compute the advantage \( A(a_t, v_t) \) and then compute the policy loss \( L_{\pi}(v_t, a_t; \theta_t) \) and the critic loss \( L_{\text{critic}}(v_t, a_t; \theta_t) \) according to the gradient. We also add an entropy loss \( L_{\pi}(v_t, a_t; \theta_t) \) to encourage diversity.

Q-value function:

\[
Q(v_t, a_t) = r_t + \gamma V(v_{t+1})
\]  

(10)

Advantage function:

\[
A(v_t, a_t) = Q(v_t, a_t) - V(v_t)
\]  

(11)

Actor loss:

\[
L_{\pi}(v_t, a_t; \theta_t) = \mathbb{E} \left[ -\log \pi_T(u|v_t; \theta_t) - \sum_{i=1}^{n} \log \pi_O(a_i|v_t, u, ..., p_{i-1}; \theta_i) \right] A(v_t, a_t)
\]  

(12)

Critic loss:

\[
L_{\text{critic}}(v_t, a_t; \theta_t) = \mathbb{E}[r_t + \gamma V(v_{t+1}) - V(v_t; \theta_t)]
\]  

(13)

Entropy loss:

\[
L_{\pi}(v_t, a_t; \theta_t) = \sum_{a \in \text{Valid}(s_t)} P(a|v_t) \log P(a|v_t)
\]  

(14)

Similar to KG-A2C [3], a supervised auxiliary task “valid action prediction” is introduced to assist RL training. We first extract the valid template set \( T_{\text{valid}}(s_t) = \{ \tau_0, \tau_1, ..., \tau_N \} \) from the valid action set \( \text{Valid}(s_t) \), and valid object set \( O_{\text{valid}}(s_t) = \{ o_0, o_1, ..., o_M \} \) from the full knowledge graph \( \mathcal{O}_{\text{KG}} \). Then we treat “whether the predicted template / objects is valid” as binary classification thus introduce two cross entropy loss functions: \( L_T(v_t, a_t; \theta_t) \) for the template and \( L_O(v_t, a_t; \theta_t) \) for the objects.

Template loss:

\[
L_T(v_t, a_t; \theta_t) = \frac{1}{N} \sum_{i=1}^{N} \left( y_{\tau_i} \log \pi_T(\tau_i|v_t) + (1 - y_{\tau_i})(1 - \log \pi_T(\tau_i|v_t)) \right)
\]  

(15)

Object loss:

\[
L_O(v_t, a_t; \theta_t) = \sum_{j=1}^{k} \frac{1}{M} \sum_{i=1}^{M} \left( y_{o_i} \log \pi_O(o_i|v_t) + (1 - y_{o_i})(1 - \log \pi_O(o_i|v_t)) \right)
\]  

(16)

where \( k \) denotes the number of object decoding steps (there are at most \( k \) objects in an action). We have \( y_{\tau_i} = 1 \) if the template \( \tau_i \in T_{\text{valid}}(s_t) \), else 0. Similarly, we have \( y_{o_i} = 1 \) if the object \( o_i \in O_{\text{valid}}(s_t) \), else 0. \( \theta_t \) will be optimized jointly with the total loss \( L_{\text{total}}(v_t, a_t; \theta_t) \), which is the weighted sum of the above five losses:

\[
L_{\text{total}}(v_t, a_t; \theta_t) = L_{\pi} + \lambda_{\text{critic}} L_{\text{critic}} + \lambda_{\pi} L_{\pi} + \lambda_{T} L_T + \lambda_{O} L_O
\]  

(17)

where \( \lambda_{\text{critic}}, \lambda_{\pi}, \lambda_{T} \) and \( \lambda_{O} \) are coefficients.
Figure 6: Interface of the game “ztuu”. Action (blue) is a textual command, and raw observation (black) is the textual feedback of previous actions.

B Interface

Fig. 6 shows an example of the raw interface of the game “ztuu”, where raw textual observations contain only the feedback of taking an action.

C Interaction examples

In this section, we show the first 15 interaction steps of two games: “zork1” and “ztuu”. Each interaction step consists of the current textual observation, triplets extracted from the current textual observation, high-level and low-level attention values obtained via different aggregation methods, chosen actions and rewards.

C.1 zork1

| Observation: Convention Hall. You are in attendance at the annual Gru Convention, this year a rather somber affair due to the “adventurer famine” that has gripped groober in this isolated corner of the empire. All around you, grobes are standing; some in conversation, some drinking, some even paying attention to the speaker. There is a trash chute in one of the walls, and a player board hangs nearby. You see some grobes, a hat, some clothes and some chewed-up shoes here |
| Action: take glasses |
| Observation: You take the pair of glasses and place them under your costume. You had better hurry; the steady gulping is becoming harder and harder for you to maintain. [Your score has just gone up by five points.] |
| Action: remove mask |
| Observation: You take off the fish-mouthed mask. |

| Step 1 |
| Textual obs: West of House. You are standing in an open field west of a white house, with a boarded front door. There is a small mailbox here. |
| a_past: look |

| New triplets |
| ([West of House, has, exit to west], [all, in, west of white house with boarded front door], [door, in, west of white house with boarded front door], [house, in, west of white house with boarded front door], [mailbox, in, west of white house with boarded front door], [you, in, field], [you, in, open field], [you, in, west], [you, in, west of house], [you, in, west of house with boarded front door], [you, in, west of house with front door], [you, in, west of white house], [you, in, west of white house with boarded front door], [you, in, west of white house with front door], [you, in, west of white house with front door]) |

| Attention values: |
| attH_max: [0.262, 0.262, 0.262, 0.213] |
| attH_mean: [0.320, 0.205, 0.267, 0.208] |
| attH_sum: [1.000, 0.000, 0.000, 0.000] |
| attH_top10_mean: [0.308, 0.202, 0.308, 0.182] |
| attH_top10_sum: [0.497, 0.007, 0.493, 0.003] |
attH_top25_mean: ['0.342', '0.169', '0.316', '0.172']
attH_top25_sum: ['0.881', '0.000', '0.119', '0.000']
attH_top50_mean: ['0.361', '0.174', '0.286', '0.179']
attH_top50_sum: ['1.000', '0.000', '0.000', '0.000']

−−−−−

attL: connectivity, item_in_room, item_in_inv, history
attL_max: ['0.250', '0.250', '0.250', '0.250']
attL_mean: ['0.250', '0.250', '0.250', '0.250']
attL_sum: ['0.251', '0.250', '0.251', '0.248']
attL_top10_mean: ['0.250', '0.250', '0.250', '0.250']
attL_top10_sum: ['0.249', '0.251', '0.248', '0.252']
attL_top25_mean: ['0.250', '0.250', '0.250', '0.250']
attL_top25_sum: ['0.249', '0.251', '0.248', '0.252']
attL_top50_mean: ['0.250', '0.250', '0.250', '0.250']
attL_top50_sum: ['0.251', '0.250', '0.251', '0.248']

===== 4. Chosen action and reward
Action: west
Reward: 0 | Score: 0

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===== Step 2 =====
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1. Textual obs:
o_desc: Forest This is a forest, with trees in all directions. To the east, there appears to be sunlight.
o_inv: You are empty-handed.
o_feed: Forest This is a forest, with trees in all directions. To the east, there appears to be sunlight.
a_past: west

2. Newly extracted triplets
[('Forest', 'has', 'exit to east'), ('all', 'in', 'Forest'), ('forest', 'is with', 'trees in directions'), ('forest this', 'is', 'forest'), ('forest this', 'is forest with', 'trees in directions'), ('trees', 'in', 'Forest'), ('trees', 'is in', 'directions'), ('west of', 'white house with boarded front door', 'west of', 'Forest')]

3. Attention values:
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attH: o_desc, o_inv, o_feed, a_past
attH_max: ['0.264', '0.265', '0.265', '0.206']
attH_mean: ['0.317', '0.207', '0.264', '0.213']
attH_sum: ['1.000', '0.000', '0.000', '0.000']
attH_top10_mean: ['0.304', '0.216', '0.304', '0.176']
attH_top10_sum: ['0.491', '0.016', '0.491', '0.002']
attH_top25_mean: ['0.342', '0.174', '0.308', '0.175']
attH_top25_sum: ['0.930', '0.000', '0.070', '0.000']
attH_top50_mean: ['0.361', '0.176', '0.279', '0.184']
attH_top50_sum: ['1.000', '0.000', '0.000', '0.000']

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attL: connectivity, item_in_room, item_in_inv, history
attL_max: ['0.250', '0.250', '0.250', '0.250']
attL_mean: ['0.250', '0.250', '0.250', '0.250']
attL_sum: ['0.252', '0.250', '0.249', '0.249']
attL_top10_mean: ['0.250', '0.250', '0.250', '0.250']
attL_top10_sum: ['0.250', '0.249', '0.248', '0.253']
attL_top25_mean: ['0.250', '0.250', '0.250', '0.250']
attL_top25_sum: ['0.250', '0.249', '0.247', '0.253']
attL_top50_mean: ['0.250', '0.250', '0.250', '0.250']
attL_top50_sum: ['0.252', '0.250', '0.249', '0.249']

4. Chosen action and reward
Action: south
Reward: 0 | Score: 0

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===== Step 3 =====
1. Textual obs:

o_desc: Forest This is a dimly lit forest, with large trees all around.
o_inv: You are empty-handed.
o_feed: Forest This is a dimly lit forest, with large trees all around. You hear in the distance the chirping of a songbird.
a_past: south

2. Newly extracted triplets

[('all', 'in', 'Forest'), ('forest this', 'is', 'dimly lit forest'), ('forest this', 'is', 'forest'), ('forest this', 'is', 'lit forest'), ('forest this', 'is dimly lit forest with', 'large trees'), ('forest this', 'is dimly lit forest with', 'large trees around'), ('forest this', 'is dimly lit forest with', 'trees'), ('forest this', 'is dimly lit forest with', 'trees around'), ('forest this', 'is forest with', 'large trees'), ('forest this', 'is forest with', 'trees'), ('forest this', 'is forest with', 'trees around'), ('forest this', 'is forest with', 'large trees around'), ('forest this', 'is forest with', 'large trees'), ('forest this', 'is forest with', 'trees'), ('forest this', 'is forest with', 'trees around'), ('forest this', 'is forest with', 'large trees around'), ('forest this', 'is forest with', 'large trees'), ('forest this', 'is forest with', 'trees'), ('forest this', 'is forest with', 'trees around'), ('large', 'in', 'Forest'), ('lit forest', 'is with', 'large trees around'), ('this', 'is', 'lit'), ('trees', 'in', 'Forest'), ('west of white house with boarded front door', 'south of', 'Forest'), ('you', 'hear', 'chirping'), ('you', 'hear', 'chirping of song bird'), ('you', 'hear chirping in', 'distance')]

3. Attention values:

- attH: o_desc, o_inv, o_feed, a_past
  - attH_max: [0.261, 0.261, 0.260, 0.218]
  - attH_mean: [0.309, 0.208, 0.255, 0.228]
  - attH_sum: [1.000, 0.000, 0.000, 0.000]
  - attH_top10_mean: [0.294, 0.215, 0.292, 0.199]
  - attH_top10_sum: [0.502, 0.022, 0.465, 0.010]
  - attH_top25_mean: [0.334, 0.176, 0.290, 0.199]
  - attH_top25_sum: [0.973, 0.000, 0.027, 0.000]
  - attH_top50_mean: [0.350, 0.179, 0.263, 0.208]
  - attH_top50_sum: [1.000, 0.000, 0.000, 0.000]

- attL: connectivity, item_in_room, item_in_inv, history
  - attL_max: [0.250, 0.250, 0.250, 0.251]
  - attL_mean: [0.250, 0.250, 0.250, 0.250]
  - attL_sum: [0.250, 0.250, 0.250, 0.250]
  - attL_top10_mean: [0.250, 0.250, 0.250, 0.250]
  - attL_top10_sum: [0.250, 0.250, 0.250, 0.250]
  - attL_top25_mean: [0.250, 0.250, 0.250, 0.250]
  - attL_top25_sum: [0.250, 0.250, 0.250, 0.250]
  - attL_top50_mean: [0.250, 0.250, 0.250, 0.250]
  - attL_top50_sum: [0.250, 0.250, 0.250, 0.250]

4. Chosen action and reward

Action: south
Reward: 0
Score: 0
2. Newly extracted triplets
[("all", "in", "Forest"), ("large", "in", "Forest"), ("lit forest" 
  , "is with", "large trees around"), ("this", "is", "lit"), (" 
  trees", "block", "your way"), ("trees", "in", "Forest"), (" 
  west of white house with boarded front door", "south of" , " 
  Forest")]

3. Attention values:

attH: o_desc, o_inv, o_feed, a_past
   attH_max : ['0.263', '0.264', '0.263', '0.210']
   attH_mean : ['0.315', '0.207', '0.253', '0.224']
   attH_sum : ['1.000', '0.000', '0.000', '0.000']
   attH_top10_mean : ['0.297', '0.212', '0.297', '0.194']
   attH_top10_sum : ['0.488', '0.017', '0.488', '0.007']
   attH_top25_mean : ['0.338', '0.174', '0.294', '0.194']
   attH_top25_sum : ['0.971', '0.000', '0.029', '0.000']
   attH_top50_mean : ['0.357', '0.178', '0.262', '0.203']
   attH_top50_sum : ['1.000', '0.000', '0.000', '0.000']

attL: connectivity, item_in_room, item_in_inv, history
   attL_max : ['0.250', '0.250', '0.250', '0.251']
   attL_mean : ['0.250', '0.250', '0.250', '0.250']
   attL_sum : ['0.252', '0.250', '0.250', '0.247']
   attL_top10_mean : ['0.250', '0.250', '0.250', '0.250']
   attL_top10_sum : ['0.250', '0.248', '0.247', '0.255']
   attL_top25_mean : ['0.250', '0.250', '0.250', '0.250']
   attL_top25_sum : ['0.252', '0.248', '0.246', '0.254']
   attL_top50_mean : ['0.250', '0.250', '0.250', '0.250']
   attL_top50_sum : ['0.252', '0.250', '0.250', '0.247']

4. Chosen action and reward
Action: west
Reward: 0 | Score: 0

Step 5

1. Textual obs:
o_desc: Forest This is a forest, with trees in all directions. To 
  the east, there appears to be sunlight.
o_inv: You are empty-handed.
o_feed: Forest
a_past: west

2. Newly extracted triplets
[("Forest", "has", "exit to east"), ("all", "in", "Forest"), (" 
  forest", "is with", "trees in directions"), ("trees", "in", 
  "Forest"), ("trees", "is in", "directions"), ("west of white 
  house with boarded front door", "west of", "Forest")]

3. Attention values:
   attH: o_desc, o_inv, o_feed, a_past
   attH_max : ['0.268', '0.267', '0.267', '0.198']
   attH_mean : ['0.325', '0.206', '0.259', '0.210']
   attH_sum : ['1.000', '0.000', '0.000', '0.000']
   attH_top10_mean : ['0.308', '0.213', '0.304', '0.175']
   attH_top10_sum : ['0.523', '0.013', '0.462', '0.002']
   attH_top25_mean : ['0.349', '0.174', '0.302', '0.175']
   attH_top25_sum : ['0.973', '0.000', '0.027', '0.000']
   attH_top50_mean : ['0.372', '0.176', '0.271', '0.181']
   attH_top50_sum : ['1.000', '0.000', '0.000', '0.000']
   attL: connectivity, item_in_room, item_in_inv, history
   attL_max : ['0.250', '0.250', '0.250', '0.250']
   attL_mean : ['0.250', '0.250', '0.250', '0.250']
   attL_sum : ['0.251', '0.250', '0.250', '0.247']
   attL_top10_mean : ['0.250', '0.250', '0.250', '0.250']
   attL_top10_sum : ['0.250', '0.248', '0.247', '0.255']
   attL_top25_mean : ['0.250', '0.250', '0.250', '0.250']
   attL_top25_sum : ['0.252', '0.248', '0.246', '0.254']
   attL_top50_mean : ['0.250', '0.250', '0.250', '0.250']
   attL_top50_sum : ['0.252', '0.250', '0.250', '0.247']
attL_top10_sum : ['0.249', '0.249', '0.250', '0.252']
attL_top25_mean: ['0.250', '0.250', '0.250', '0.250']
attL_top25_sum : ['0.250', '0.249', '0.249', '0.252']
attL_top50_mean: ['0.250', '0.250', '0.250', '0.250']
attL_top50_sum : ['0.251', '0.249', '0.249', '0.251']

====== 4. Chosen action and reward
Action: east
Reward: 0 | Score: 0

——— Step 6 ————

1. Textual obs:
o_desc: Forest Path This is a path winding through a dimly lit forest. The path heads north-south here. One particularly large tree with some low branches stands at the edge of the path.
o_inv: You are empty-handed. You hear in the distance the chirping of a songbird.
o_feed: Forest Path This is a path winding through a dimly lit forest. The path heads north-south here. One particularly large tree with some low branches stands at the edge of the path.
a_past: east

2. Newly extracted triplets
[('Forest Path', 'has', 'exit to north'), ('Forest Path', 'has', 'exit to south'), ('all', 'in', 'Forest Path'), ('forest', 'in', 'Forest Path'), ('one large tree', 'is with', 'low branches'), ('path', 'in', 'Forest Path'), ('path', 'winding through', 'dimly lit forest'), ('path', 'winding through', 'forest'), ('path', 'winding through', 'lit forest'), ('tree', 'in', 'Forest Path'), ('west of white house with boarded front door', 'east of', 'Forest Path')]

3. Attention values:
   — attH: o_desc, o_inv, o_feed, a_past
   attH_max : ['0.254', '0.250', '0.255', '0.241']
   attH_mean : ['0.284', '0.223', '0.276', '0.217']
   attH_sum : ['0.932', '0.000', '0.068', '0.000']
   attH_top10_mean : ['0.281', '0.231', '0.287', '0.201']
   attH_top25_mean : ['0.415', '0.059', '0.511', '0.015']
   attH_top50_mean : ['0.302', '0.203', '0.313', '0.182']
   attH_top10_sum : ['0.294', '0.000', '0.706', '0.000']
   attH_top25_sum : ['0.307', '0.203', '0.299', '0.191']
   attH_top50_sum : ['0.775', '0.000', '0.225', '0.000']
   — attL: connectivity, item_in_room, item_in_inv, history
   attL_max : ['0.250', '0.250', '0.250', '0.250']
   attL_mean : ['0.250', '0.250', '0.250', '0.250']
   attL_sum : ['0.251', '0.251', '0.251', '0.247']
   attL_top10_mean : ['0.250', '0.250', '0.250', '0.250']
   attL_top10_sum : ['0.250', '0.250', '0.250', '0.250']
   attL_top25_mean : ['0.250', '0.250', '0.250', '0.250']
   attL_top25_sum : ['0.250', '0.250', '0.250', '0.250']
   attL_top50_mean : ['0.250', '0.250', '0.250', '0.250']
   attL_top50_sum : ['0.251', '0.251', '0.251', '0.247']

4. Chosen action and reward
Action: up
Reward: 0 | Score: 0

——— Step 7 ————

1. Textual obs:
o_desc: Up a Tree You are about 10 feet above the ground nestled among some large branches. The nearest branch above you is above your reach. Beside you on the branch is a small bird’s nest. In the bird’s nest is a large egg encrusted with precious jewels, apparently scavenged by a childless songbird.

The egg is covered with fine gold inlay, and ornamented in lapis lazuli and mother-of-pearl. Unlike most eggs, this one is hinged and closed with a delicate looking clasp. The egg appears extremely fragile.

o_inv: You are empty-handed.

o_feed: Up a Tree You are about 10 feet above the ground nestled among some large branches. The nearest branch above you is above your reach. Beside you on the branch is a small bird’s nest. In the bird’s nest is a large egg encrusted with precious jewels, apparently scavenged by a childless songbird.

The egg is covered with fine gold inlay, and ornamented in lapis lazuli and mother-of-pearl. Unlike most eggs, this one is hinged and closed with a delicate looking clasp. The egg appears extremely fragile.

a_past: up

===== 2. Newly extracted triplets

==== 3. Attention values:

—— attH: o_desc, o_inv, o_feed, a_past
attH_max : [‘0.258’, ‘0.253’, ‘0.259’, ‘0.231’]
attH_mean : [‘0.263’, ‘0.202’, ‘0.331’, ‘0.204’]
attH_sum : [‘0.000’, ‘0.000’, ‘1.000’, ‘0.000’]
attH_top10_mean : [‘0.311’, ‘0.181’, ‘0.320’, ‘0.187’]
attH_top10_sum : [‘0.422’, ‘0.002’, ‘0.574’, ‘0.003’]
attH_top25_mean : [‘0.317’, ‘0.162’, ‘0.354’, ‘0.168’]
attH_top25_sum : [‘0.061’, ‘0.000’, ‘0.939’, ‘0.000’]
attH_top50_mean : [‘0.280’, ‘0.167’, ‘0.381’, ‘0.171’]
attH_top50_sum : [‘0.000’, ‘0.000’, ‘1.000’, ‘0.000’]

—— attL: connectivity, item_in_room, item_in_inv, history
attL_max : [‘0.250’, ‘0.250’, ‘0.250’, ‘0.250’]
attL_mean : [‘0.250’, ‘0.250’, ‘0.250’, ‘0.250’]
AttL_sum : ['0.250', '0.251', '0.250', '0.248']
AttL_top10_mean : ['0.250', '0.250', '0.250', '0.250']
AttL_top10_sum : ['0.249', '0.251', '0.249', '0.251']
AttL_top25_mean : ['0.250', '0.250', '0.250', '0.250']
AttL_top25_sum : ['0.250', '0.251', '0.248', '0.251']
AttL_top50_mean : ['0.250', '0.250', '0.250', '0.250']
AttL_top50_sum : ['0.250', '0.251', '0.250', '0.248']

===== 4. Chosen action and reward
Action: take egg
Reward: 5 | Score: 5

==== Step 8 ====

1. Textual obs:
o_desc: Up a Tree You are about 10 feet above the ground nestled among some large branches. The nearest branch above you is above your reach. Beside you on the branch is a small bird’s nest.
o_inv: You are carrying: A jewel–encrusted egg
o_feed: Taken.
a_past: take egg

2. Newly extracted triplets

3. Attention values:
al: o_desc, o_inv, o_feed, a_past
attH_max : ['0.263', '0.211', '0.263', '0.262']
attH_mean : ['0.348', '0.201', '0.248', '0.203']
attH_sum : ['1.000', '0.000', '0.000', '0.000']
attH_top10_mean : ['0.318', '0.184', '0.310', '0.188']
attH_top10_sum : ['0.557', '0.002', '0.438', '0.003']
attH_top25_mean : ['0.362', '0.169', '0.296', '0.173']
attH_top25_sum : ['0.993', '0.000', '0.007', '0.000']
attH_top50_mean : ['0.395', '0.173', '0.257', '0.175']
attH_top50_sum : ['1.000', '0.000', '0.000', '0.000']

al: connectivity, item_in_room, item_in_inv, history
attL_max : ['0.250', '0.249', '0.248', '0.253']
attL_mean : ['0.250', '0.250', '0.250', '0.250']
attL_sum : ['0.255', '0.250', '0.251', '0.244']
attL_top10_mean : ['0.250', '0.249', '0.249', '0.251']
attL_top10_sum : ['0.252', '0.245', '0.240', '0.263']
attL_top25_mean : ['0.250', '0.250', '0.249', '0.250']
attL_top25_sum : ['0.256', '0.245', '0.237', '0.262']
attL_top50_mean : ['0.250', '0.250', '0.250', '0.250']
attL_top50_sum : ['0.255', '0.250', '0.251', '0.244']

4. Chosen action and reward
Action: put egg in egg
Reward: 0 | Score: 5

==== Step 9 ====

1. Textual obs:
o_desc: Up a Tree You are about 10 feet above the ground nestled among some large branches. The nearest branch above you is above your reach. Beside you on the branch is a small bird’s nest.
o_inv: You are carrying: A jewel–encrusted egg You hear in the distance the chirping of a song bird.
o_feed: The jewel-encrusted egg isn't open.
a_past: put egg in egg

===== 2. Newly extracted triplets
[('all', 'in', 'about 10 feet'), ('branch', 'in', 'about 10 feet'),
('egg', 'in', 'about 10 feet'), ('ground', 'in', 'about 10 feet'),
('nest', 'in', 'about 10 feet'), ('you', 'have', ''), ('you', 'have', 'hear in the distance the chirping of a song bird'), ('you', 'have', 'jewel-encrusted egg'), ('you', 'in', 'about 10 feet')]

===== 3. Attention values:

−−−−−

attH: o_desc, o_inv, o_feed, a_past
attH_max : ['0.252', '0.244', '0.253', '0.251']
attH_mean : ['0.331', '0.213', '0.250', '0.206']
attH_sum : ['1.000', '0.000', '0.000', '0.000']
attH_top10_mean : ['0.297', '0.208', '0.295', '0.200']
attH_top10_sum : ['0.503', '0.014', '0.474', '0.099']
attH_top25_mean : ['0.346', '0.189', '0.291', '0.174']
attH_top25_sum : ['0.987', '0.000', '0.013', '0.000']
attH_top50_mean : ['0.373', '0.191', '0.258', '0.178']
attH_top50_sum : ['1.000', '0.000', '0.000', '0.000']

−−−−−

attL: connectivity, item_in_room, item_in_inv, history
attL_max : ['0.250', '0.249', '0.249', '0.252']
attL_mean : ['0.250', '0.250', '0.250', '0.250']
attL_sum : ['0.252', '0.251', '0.250', '0.247']
attL_top10_mean : ['0.250', '0.249', '0.249', '0.252']
attL_top10_sum : ['0.250', '0.250', '0.249', '0.251']
attL_top25_mean : ['0.250', '0.250', '0.250', '0.250']
attL_top25_sum : ['0.250', '0.250', '0.250', '0.250']
attL_top50_mean : ['0.250', '0.250', '0.250', '0.250']
attL_top50_sum : ['0.252', '0.251', '0.250', '0.247']

===== 4. Chosen action and reward
Action: down
Reward: 0
Score: 5

===== 1. Textual obs:
o_desc: Forest Path This is a path winding through a dimly lit forest. The path heads north–south here. One particularly large tree with some low branches stands at the edge of the path.
o_inv: You are carrying: A jewel-encrusted egg You hear in the distance the chirping of a song bird.
o_feed: Forest Path
a_past: down

===== 2. Newly extracted triplets
[('Forest Path', 'has', 'exit to north'), ('Forest Path', 'has', 'exit to south'), ('about 10 feet', 'down of', 'Forest Path'), ('all', 'in', 'Forest Path'), ('egg', 'in', 'Forest Path'), ('forest', 'in', 'Forest Path'), ('one large tree', 'is with', 'low branches'), ('path', 'in', 'Forest Path'), ('path', 'winding through', 'dimly lit forest'), ('path', 'winding through', 'forest'), ('path', 'winding through', 'lit forest'), ('tree', 'in', 'Forest Path'), ('you', 'have', ''), ('you', 'have', 'hear in the distance the chirping of a song bird.'), ('you', 'have', 'jewel-encrusted egg')]

===== 3. Attention values:

−−−−−

attH: o_desc, o_inv, o_feed, a_past
attH_max : ['0.254', '0.253', '0.255', '0.238']
attH_mean : ['0.322', '0.224', '0.248', '0.206']
attH_sum: ['1.000', '0.000', '0.000', '0.000']
attH_top10_mean: ['0.297', '0.222', '0.296', '0.185']
attH_top10_sum: ['0.493', '0.027', '0.475', '0.004']
attH_top25_mean: ['0.337', '0.215', '0.275', '0.173']
attH_top25_sum: ['0.994', '0.000', '0.006', '0.000']
attH_top50_mean: ['0.356', '0.212', '0.252', '0.181']
attH_top50_sum: ['1.000', '0.000', '0.000', '0.000']

attL: connectivity, item_in_room, item_in_inv, history
attL_max: ['0.250', '0.250', '0.249', '0.251']
attL_mean: ['0.250', '0.250', '0.250', '0.250']
attL_sum: ['0.251', '0.250', '0.250', '0.249']
attL_top10_mean: ['0.250', '0.250', '0.250', '0.251']
attL_top10_sum: ['0.250', '0.247', '0.247', '0.255']
attL_top25_mean: ['0.250', '0.250', '0.250', '0.250']
attL_top25_sum: ['0.252', '0.247', '0.246', '0.254']
attL_top50_mean: ['0.250', '0.250', '0.250', '0.250']
attL_top50_sum: ['0.251', '0.250', '0.250', '0.249']

−−−−− 4. Chosen action and reward
Action: blow out trees
Reward: 0 | Score: 5

−−−−− Step 11 −−−−−
−−−−− 1. Textual obs:
o_desc: Forest Path This is a path winding through a dimly lit forest. The path heads north-south here. One particularly large tree with some low branches stands at the edge of the path. You hear in the distance the chirping of a song bird.
o_inv: You are carrying: A jewel–encrusted egg You hear in the distance the chirping of a song bird.
o_feed: You can’t turn that off.a_past: blow out trees
−−−−− 2. Newly extracted triplets
−−−−− 3. Attention values:
−−−−− attH: o_desc, o_inv, o_feed, a_past
attH_max: [’0.254’, ’0.248’, ’0.254’, ’0.244’]
attH_mean: [’0.325’, ’0.215’, ’0.253’, ’0.207’]
attH_sum: [’1.000’, ’0.000’, ’0.000’, ’0.000’]
attH_top10_mean: [’0.300’, ’0.203’, ’0.300’, ’0.197’]
attH_top10_sum: [’0.491’, ’0.010’, ’0.492’, ’0.007’]
attH_top25_mean: [’0.341’, ’0.192’, ’0.292’, ’0.175’]
attH_top25_sum: [’0.980’, ’0.000’, ’0.020’, ’0.000’]
attH_top50_mean: [’0.361’, ’0.195’, ’0.263’, ’0.181’]
attH_top50_sum: [’1.000’, ’0.000’, ’0.000’, ’0.000’]
−−−−− attL: connectivity, item_in_room, item_in_inv, history
attL_max: [’0.250’, ’0.249’, ’0.249’, ’0.252’]
attL_mean: [’0.250’, ’0.250’, ’0.250’, ’0.250’]
attL_sum: [’0.252’, ’0.250’, ’0.250’, ’0.247’]
attL_top10_mean: [’0.250’, ’0.250’, ’0.250’, ’0.251’]
====== 4. Chosen action and reward

Action: south
Reward: 0 | Score: 5

====== Step 12 ======

1. Textual obs:
   o_desc: North of House You are facing the north side of a white house. There is no door here, and all the windows are boarded up. To the north a narrow path winds through the trees.
   o_inv: You are carrying: A jewel–encrusted egg
   o_feed: North of House You are facing the north side of a white house. There is no door here, and all the windows are boarded up. To the north a narrow path winds through the trees.

a_past: south

2. Newly extracted triplets
   [('North of House', 'has', 'exit to north'), ('North of House', 'has', 'exit to up'), ('about 10 feet', 'south of', 'north side of white house'), ('all', 'in', 'north side of white house'), ('egg', 'in', 'north side of white house'), ('house', 'in', 'north side of white house'), ('narrow', 'in', 'north side of white house'), ('windows', 'in', 'north side of white house'), ('you', 'have', ''), ('you', 'have', 'jewel–encrusted egg'), ('you', 'in', 'north side'), ('you', 'in', 'north side of house'), ('you', 'in', 'north side of white house'), ('you', 'in', 'side'), ('you', 'in', 'side of house'), ('you', 'in', 'side of white house')]

3. Attention values:

--- attH: o_desc, o_inv, o_feed, a_past
attH_max : ['0.249', '0.254', '0.257', '0.241']
attH_mean : ['0.265', '0.209', '0.275', '0.250']
attH_sum : ['0.028', '0.000', '0.972', '0.000']
attH_top10_mean : ['0.267', '0.196', '0.287', '0.249']
attH_top10_sum : ['0.013', '0.000', '0.571', '0.138']
attH_top25_mean : ['0.271', '0.173', '0.307', '0.249']
attH_top25_sum : ['0.041', '0.000', '0.954', '0.005']
attH_top50_mean : ['0.273', '0.183', '0.296', '0.248']
attH_top50_sum : ['0.017', '0.000', '0.983', '0.000']

--- attL: connectivity, item_in_room, item_in_inv, history
attL_max : ['0.250', '0.250', '0.250', '0.250']
attL_mean : ['0.250', '0.250', '0.250', '0.250']
attL_sum : ['0.252', '0.250', '0.250', '0.250']
attL_top10_mean : ['0.250', '0.250', '0.250', '0.250']
attL_top10_sum : ['0.250', '0.250', '0.250', '0.250']
attL_top25_mean : ['0.250', '0.250', '0.250', '0.250']
attL_top25_sum : ['0.250', '0.250', '0.250', '0.250']
attL_top50_mean : ['0.250', '0.250', '0.250', '0.250']
attL_top50_sum : ['0.250', '0.250', '0.250', '0.250']

====== 4. Chosen action and reward

Action: east
Reward: 0 | Score: 5

====== Step 13 ======

1. Textual obs:
Behind House You are behind the white house. A path leads into the forest to the east. In one corner of the house there is a small window which is slightly ajar.

You are carrying: A jewel-encrusted egg

With great effort, you open the window far enough to allow entry.

Action: open window
Reward: 0 | Score: 5
==== 3. Attention values:

--- attH: o_desc, o_inv, o_feed, a_past

attH_max : ['0.276', '0.186', '0.277', '0.261']
attH_mean : ['0.256', '0.207', '0.323', '0.214']
attH_sum : ['0.000', '0.000', '1.000', '0.000']
attH_top10_mean : ['0.310', '0.176', '0.312', '0.201']
attH_top10_sum : ['0.478', '0.002', '0.514', '0.006']
attH_top25_mean : ['0.302', '0.167', '0.343', '0.187']
attH_top25_sum : ['0.038', '0.000', '0.962', '0.000']
attH_top50_mean : ['0.264', '0.174', '0.376', '0.186']
attH_top50_sum : ['0.000', '0.000', '1.000', '0.000']

--- attL: connectivity, item_in_room, item_in_inv, history

attL_max : ['0.250', '0.250', '0.250', '0.250']
attL_mean : ['0.250', '0.250', '0.250', '0.250']
attL_sum : ['0.250', '0.250', '0.250', '0.250']
attL_top10_mean : ['0.250', '0.250', '0.250', '0.250']
attL_top10_sum : ['0.250', '0.250', '0.250', '0.250']
attL_top25_mean : ['0.250', '0.250', '0.250', '0.250']
attL_top25_sum : ['0.250', '0.250', '0.250', '0.250']
attL_top50_mean : ['0.250', '0.250', '0.250', '0.250']
attL_top50_sum : ['0.250', '0.250', '0.250', '0.250']

==== 4. Chosen action and reward

Action: west
Reward: 10 | Score: 15

===== Step 15 =====

===== 1. Textual obs:

o_desc: Kitchen You are in the kitchen of the white house. A table seems to have been used recently for the preparation of food. A passage leads to the west and a dark staircase can be seen leading upward. A dark chimney leads down and to the east is a small window which is open. On the table is an elongated brown sack, smelling of hot peppers. A bottle is sitting on the table. The glass bottle contains: A quantity of water

o_inv: You are carrying: A jewel–encrusted egg

o_feed: Kitchen You are in the kitchen of the white house. A table seems to have been used recently for the preparation of food. A passage leads to the west and a dark staircase can be seen leading upward. A dark chimney leads down and to the east is a small window which is open. On the table is an elongated brown sack, smelling of hot peppers. A bottle is sitting on the table. The glass bottle contains: A quantity of water

a_past: west
attH: o_desc, o_inv, o_feed, a_past

attH_max: ['0.211', '0.218', '0.304', '0.267']
atth_mean: ['0.246', '0.217', '0.275', '0.262']
atth_sum: ['0.000', '0.000', '0.990', '0.010']
atth_top10_mean: ['0.208', '0.196', '0.338', '0.259']
atth_top10_sum: ['0.000', '0.000', '0.990', '0.010']
atth_top25_mean: ['0.221', '0.198', '0.319', '0.263']
atth_top25_sum: ['0.000', '0.000', '0.992', '0.008']
atth_top50_mean: ['0.235', '0.204', '0.297', '0.265']
atth_top50_sum: ['0.000', '0.000', '0.997', '0.003']

attL: connectivity, item_in_room, item_in_inv, history

attL_max: ['0.250', '0.250', '0.250', '0.250']
atthL_mean: ['0.250', '0.250', '0.250', '0.250']
atthL_sum: ['0.252', '0.250', '0.249', '0.248']
atthL_top10_mean: ['0.250', '0.250', '0.250', '0.250']
atthL_top10_sum: ['0.251', '0.248', '0.248', '0.253']
atthL_top25_mean: ['0.250', '0.250', '0.250', '0.250']
atthL_top25_sum: ['0.252', '0.248', '0.247', '0.253']
atthL_top50_mean: ['0.250', '0.250', '0.250', '0.250']
atthL_top50_sum: ['0.252', '0.250', '0.249', '0.248']

4. Chosen action and reward
Action: west
Reward: 0 | Score: 15

C.2 zuuu

1. Textual obs:
o_desc: New Excavation You are standing at the entrance of a narrow, waist-high tunnel that winds out of sight to the northeast. This, you have been told, is the entrance to the newfound areas of the Great Underground Empire.
o_inv: You are carrying: a cheaply-made sword a brass lantern (providing light)
o_feed: It is with great hope and expectation I send you on this mission," the Grand Inquisitor intones, his voice booming like distant, rumbling thunderheads. "We have discovered what appears to be a piece of the Great Underground Empire, never before explored. I would have sent Grubald the Bold, but he's busy. As is Matchlick the Mighty. So, 'tis you." "What of Linklaw the Lucky?" you ask shyly. "Laid up. I'm afraid 'tis you and none other. A simple, solo quest, one of fun and mirth, mischief and merriment, a jaunt, an excursion, a simple outing. Merely explore, enjoy yourself, and bring back news of what lies there, long-ago buried for countless ages." "And Fretsham the Fortunate?" you ask hopefully. "A fatality!" the Inquisitor booms. "Here," he says with evaporating patience, "take these and be of good cheer." He thrusts into your hands two things: a brass lantern of dubious quality; and a plastic sword of no antiquity or use whatsoever. "But what of Kolchack the — " "Enough! Kolchack is contracted. Remember, who is the boss of you!" He pauses briefly as if awaiting a reply. Then without warning, he answers his own question. "Me! I am the boss of you! Now begone!" And with that, you embark on... Zork: The Undiscovered Underground, a text adventure prequel to Zork Grand Inquisitor Copyright 1997 by Activision Inc. Written by Marc Blank and Mike Berlyn, programmed by Gerry Kevin Wilson. Release 16 / Serial number 970828 / Inform v6.13 Library 6/2 Standard interpreter 1.0 New Excavation You are
standing at the entrance of a narrow, waist–high tunnel that winds out of sight to the northeast. This, you have been told, is the entrance to the newfound areas of the Great Underground Empire. In your left hand hangs a rather unconvincing replica of the traditional adventurer’s brass lantern. In the other is an ersatz–Elvish sword of no antiquity whatsoever. Its plastic blade, dull as a bread knife, barely reflects the lantern’s dim and uneven glow.

a_past: look

==== 2. newly extracted triplets

==== 3. Attention values:
—— attH: o_desc, o_inv, o_feed, a_past
attH_max : ['0.223', '0.247', '0.257', '0.273']
atth_mean : ['0.255', '0.240', '0.238', '0.268']
atth_sum : ['0.006', '0.000', '0.000', '0.994']
atth_top10_mean: ['0.229', '0.235', '0.223', '0.313']
atth_top10_sum : ['0.039', '0.049', '0.029', '0.883']
atth_top25_mean : ['0.230', '0.223', '0.212', '0.335']
atth_top25_sum : ['0.000', '0.000', '0.000', '1.000']
atth_top50_mean : ['0.250', '0.230', '0.224', '0.296']
atth_top50_sum : ['0.000', '0.000', '0.000', '1.000']
—— attL: connectivity, item_in_room, item_in_inv, history
attL_max : ['0.245', '0.255', '0.249', '0.251']
atll_mean : ['0.251', '0.242', '0.253', '0.253']
atll_sum : ['0.251', '0.042', '0.328', '0.379']
atll_top10_mean: ['0.247', '0.249', '0.250', '0.253']
atll_top10_sum : ['0.223', '0.243', '0.252', '0.282']
atll_top25_mean : ['0.249', '0.246', '0.251', '0.253']
atll_top25_sum : ['0.215', '0.165', '0.279', '0.341']
atll_top50_mean : ['0.251', '0.242', '0.253', '0.253']
atll_top50_sum : ['0.251', '0.042', '0.328', '0.379']

==== 4. Chosen action and reward
Action: turn brass off
Reward: 0

—— ——— Step 2 ——— ———

==== 1. Textual obs:
o_desc: New Excavation You are standing at the entrance of a narrow, waist–high tunnel that winds out of sight to the northeast. This, you have been told, is the entrance to the newfound areas of the Great Underground Empire.

o_inv: You are carrying: a cheaply–made sword a brass lantern

o_feed: The lantern is now off. You had better hope that it comes back on when you come to your senses.

a_past: turn brass off


28
2. newly extracted triplets
[("all", "in", "entrance of narrow waist high tunnel"), ("lantern", "in", "entrance of narrow waist high tunnel"), ("northeast", "in", "entrance of narrow waist high tunnel"), ("sword", "in", "entrance of narrow waist high tunnel"), ("tunnel", "in", "entrance of narrow waist high tunnel"), ("you", "have", "brass lantern"), ("you", "have", "cheaply-made sword"), ("you", "in", "entrance"), ("you", "in", "entrance of narrow waist tunnel"), ("you", "in", "entrance of waist tunnel")]

3. Attention values:

\[\begin{align*}
\text{attH max} & : [0.275, 0.242, 0.209, 0.275] \\
\text{attH mean} & : [0.321, 0.213, 0.204, 0.262] \\
\text{attH sum} & : [1.000, 0.000, 0.000, 0.000] \\
\text{attH top10 mean} & : [0.312, 0.214, 0.161, 0.313] \\
\text{attH top10 sum} & : [1.000, 0.000, 0.000, 0.000] \\
\text{attH top25 mean} & : [0.339, 0.181, 0.153, 0.327] \\
\text{attH top25 sum} & : [0.700, 0.000, 0.000, 0.300] \\
\text{attH top50 mean} & : [0.374, 0.182, 0.167, 0.277] \\
\text{attH top50 sum} & : [1.000, 0.000, 0.000, 0.000]
\end{align*}\]

\[\begin{align*}
\text{attL max} & : [0.248, 0.251, 0.251, 0.249] \\
\text{attL mean} & : [0.250, 0.248, 0.251, 0.250] \\
\text{attL sum} & : [0.253, 0.174, 0.310, 0.263] \\
\text{attL top10 mean} & : [0.249, 0.250, 0.251, 0.249] \\
\text{attL top10 sum} & : [0.250, 0.250, 0.265, 0.245] \\
\text{attL top25 mean} & : [0.250, 0.249, 0.251, 0.250] \\
\text{attL top25 sum} & : [0.237, 0.228, 0.289, 0.246] \\
\text{attL top50 mean} & : [0.250, 0.248, 0.251, 0.250] \\
\text{attL top50 sum} & : [0.253, 0.174, 0.310, 0.263]
\end{align*}\]

4. Chosen action and reward
Action: throw brass
Reward: 5 | Score: 5

Step 3

1. Textual obs:
o_desc: New Excavation You are standing at the entrance of a narrow, waist-high tunnel that winds out of sight to the northeast. This, you have been told, is the entrance to the newfound areas of the Great Underground Empire.
o_inv: You are carrying: a cheaply-made sword a brass lantern (providing light)
o_feed: You throw the lamp, and quickly retrieve it. Your rough treatment of the lantern was enough to get it lit again. This must be your lucky day. [Your score has just gone up by five points.]
a_past: throw brass

2. newly extracted triplets
[("New Excavation", "has", "exit to up"), ("all", "in", "entrance of narrow waist high tunnel"), ("lantern", "in", "entrance of narrow waist high tunnel"), ("northeast", "in", "entrance of narrow waist high tunnel"), ("sword", "in", "entrance of narrow waist high tunnel"), ("tunnel", "in", "entrance of narrow waist high tunnel"), ("you", "have", "brass lantern (providing light)"), ("you", "have", "cheaply-made sword"), ("you", "in", "entrance"), ("you", "in", "entrance of narrow waist tunnel"), ("you", "in", "entrance of waist tunnel")]

tunnel'), ('you', 'in', 'entrance of waist high tunnel'), ('you', 'in', 'entrance of waist tunnel')]

==== 3. Attention values:

--- attH: o_desc, o_inv, o_feed, a_past
attH_max : ['0.250', '0.240', '0.255', '0.255']
atH_mean : ['0.262', '0.227', '0.243', '0.268']
atH_sum : ['0.111', '0.000', '0.000', '0.889']
atH_top10_mean : ['0.263', '0.215', '0.243', '0.279']
atH_top10_sum : ['0.295', '0.039', '0.131', '0.535']
atH_top25_mean : ['0.272', '0.199', '0.231', '0.298']
atH_top25_sum : ['0.094', '0.000', '0.002', '0.904']
atH_top50_mean : ['0.272', '0.206', '0.237', '0.285']
atH_top50_sum : ['0.087', '0.000', '0.000', '0.913']

--- attL: connectivity, item_in_room, item_in_inv, history
attL_max : ['0.251', '0.249', '0.250', '0.250']
atL_mean : ['0.250', '0.250', '0.250', '0.250']
atL_sum : ['0.258', '0.244', '0.244', '0.254']
atL_top10_mean : ['0.250', '0.250', '0.250', '0.250']
atL_top10_sum : ['0.254', '0.247', '0.247', '0.252']
atL_top25_mean : ['0.250', '0.250', '0.250', '0.250']
atL_top25_sum : ['0.257', '0.244', '0.245', '0.254']
atL_top50_mean : ['0.250', '0.250', '0.250', '0.250']
atL_top50_sum : ['0.258', '0.244', '0.244', '0.254']

==== 4. Chosen action and reward
Action: turn lantern off
Reward: 0 | Score: 5

--- Step 4 ---

===== 1. Textual obs:
o_desc: New Excavation You are standing at the entrance of a narrow, waist-high tunnel that winds out of sight to the northeast. This, you have been told, is the entrance to the newfound areas of the Great Underground Empire.
o_inv: You are carrying: a cheaply-made sword a brass lantern
o_feed: The lantern is now off. You had better hope that it comes back on when you come to your senses.
a_past: turn lantern off

== 2. newly extracted triplets
[('all', 'in', 'entrance of narrow waist high tunnel'), ('lantern', 'in', 'entrance of narrow waist high tunnel'), ('northeast', 'in', 'entrance of narrow waist high tunnel'), ('sword', 'in', 'entrance of narrow waist high tunnel'), ('tunnel', 'in', 'entrance of narrow waist high tunnel'), ('you', 'have', 'brass lantern'), ('you', 'have', 'cheaply-made sword'), ('you', 'in', 'entrance'), ('you', 'in', 'entrance of narrow waist high tunnel'), ('you', 'in', 'entrance of narrow waist tunnel'), ('you', 'in', 'entrance of waist high tunnel')]

==== 3. Attention values:

--- attH: o_desc, o_inv, o_feed, a_past
attH_max : ['0.279', '0.212', '0.227', '0.282']
atH_mean : ['0.269', '0.236', '0.224', '0.271']
atH_sum : ['0.330', '0.000', '0.000', '0.670']
atH_top10_mean : ['0.294', '0.205', '0.191', '0.311']
atH_top10_sum : ['0.360', '0.010', '0.005', '0.625']
atH_top25_mean : ['0.294', '0.204', '0.185', '0.318']
atH_top25_sum : ['0.117', '0.000', '0.000', '0.883']
atH_top50_mean : ['0.285', '0.218', '0.201', '0.295']
atH_top50_sum : ['0.147', '0.000', '0.000', '0.853']
attendability: connectivity, item_in_room, item_in_inv, history
attendability_max: ['0.249', '0.252', '0.250', '0.248']
attendability_mean: ['0.249', '0.250', '0.250', '0.250']
attendability_sum: ['0.219', '0.274', '0.265', '0.241']
attendability_top10_mean: ['0.249', '0.252', '0.251', '0.248']
attendability_top10_sum: ['0.240', '0.266', '0.256', '0.238']
attendability_top25_mean: ['0.249', '0.251', '0.251', '0.249']
attendability_top25_sum: ['0.232', '0.275', '0.262', '0.231']
attendability_top50_mean: ['0.249', '0.250', '0.250', '0.250']
attendability_top50_sum: ['0.219', '0.274', '0.265', '0.241']

==== 4. Chosen action and reward
Action: take into sword
Reward: 0|Score: 5

==== ====== Step 5 ====== ======

1. Textual obs:
o_desc: New Excavation You are standing at the entrance of a narrow, waist-high tunnel that winds out of sight to the northeast. This, you have been told, is the entrance to the newfound areas of the Great Underground Empire.
o_inv: You are carrying: a cheaply-made sword a brass lantern
o_feed: That’s not something you can enter.
a_past: take into sword

2. newly extracted triplets
[('all', 'in', 'entrance of narrow waist high tunnel'), ('lantern', 'in', 'entrance of narrow waist high tunnel'), ('northeast', 'in', 'entrance of narrow waist high tunnel'), ('sword', 'in', 'entrance of narrow waist high tunnel'), ('tunnel', 'in', 'entrance of narrow waist high tunnel'), ('you', 'have', 'brass lantern'), ('you', 'have', 'cheaply-made sword'), ('you', 'in', 'entrance'), ('you', 'in', 'entrance of narrow waist high tunnel'), ('you', 'in', 'entrance of narrow waist tunnel'), ('you', 'in', 'entrance of waist high tunnel'), ('you', 'in', 'entrance of waist tunnel')]

3. Attention values:
attendability: o_desc, o_inv, o_feed, a_past
attendability_max: ['0.272', '0.205', '0.248', '0.275']
attendability_mean: ['0.265', '0.233', '0.225', '0.277']
attendability_sum: ['0.012', '0.000', '0.000', '0.988']
attendability_top10_mean: ['0.288', '0.203', '0.202', '0.306']
attendability_top10_sum: ['0.344', '0.011', '0.010', '0.635']
attendability_top25_mean: ['0.283', '0.202', '0.191', '0.324']
attendability_top25_sum: ['0.032', '0.000', '0.000', '0.968']
attendability_top50_mean: ['0.276', '0.216', '0.205', '0.303']
attendability_top50_sum: ['0.009', '0.000', '0.000', '0.991']

attendability: connectivity, item_in_room, item_in_inv, history
attendability_max: ['0.249', '0.252', '0.251', '0.248']
attendability_mean: ['0.249', '0.250', '0.251', '0.250']
attendability_sum: ['0.214', '0.269', '0.276', '0.241']
attendability_top10_mean: ['0.249', '0.252', '0.251', '0.248']
attendability_top10_sum: ['0.238', '0.265', '0.262', '0.235']
attendability_top25_mean: ['0.249', '0.251', '0.251', '0.249']
attendability_top25_sum: ['0.227', '0.275', '0.272', '0.226']
attendability_top50_mean: ['0.249', '0.250', '0.251', '0.250']
attendability_top50_sum: ['0.214', '0.269', '0.276', '0.241']

4. Chosen action and reward
Action: throw brass
Reward: 0|Score: 5
1. Textual obs:
o_desc: New Excavation You are standing at the entrance of a narrow, waist-high tunnel that winds out of sight to the northeast. This, you have been told, is the entrance to the newfound areas of the Great Underground Empire.
o_inv: You are carrying: a cheaply-made sword a brass lantern (providing light)
o_feed: You throw the lamp, and quickly retrieve it. Your rough treatment of the lantern was enough to get it lit again. This must be your lucky day.
a_past: throw brass

2. newly extracted triplets
(['all', 'in', 'entrance of narrow waist high tunnel'], ('lantern', 'in', 'entrance of narrow waist high tunnel'), ('northeast', 'in', 'entrance of narrow waist high tunnel'), ('sword', 'in', 'entrance of narrow waist high tunnel'), ('tunnel', 'in', 'entrance of narrow waist high tunnel'), ('you', 'have', 'brass lantern (providing light)'), ('you', 'have', 'cheaply-made sword'), ('you', 'in', 'entrance'), ('you', 'in', 'entrance of narrow waist tunnel'), ('you', 'in', 'entrance of waist high tunnel'), ('you', 'in', 'entrance of waist tunnel')]

3. Attention values:
--- attH: o_desc, o_inv, o_feed, a_past
attH_max : ['0.249', '0.242', '0.253', '0.255']
attH_mean : ['0.268', '0.228', '0.230', '0.274']
attH_sum : ['0.104', '0.000', '0.000', '0.896']
attH_top10_mean : ['0.272', '0.220', '0.218', '0.290']
attH_top10_sum : ['0.320', '0.039', '0.034', '0.607']
attH_top25_mean : ['0.283', '0.205', '0.203', '0.308']
attH_top25_sum : ['0.104', '0.000', '0.000', '0.896']
attH_top50_mean : ['0.283', '0.209', '0.212', '0.297']
attH_top50_sum : ['0.083', '0.000', '0.000', '0.917']
--- attL: connectivity, item_in_room, item_in_inv, history
attL_max : ['0.250', '0.250', '0.250', '0.250']
attL_mean : ['0.250', '0.250', '0.250', '0.250']
attL_sum : ['0.251', '0.244', '0.250', '0.255']
attL_top10_mean : ['0.250', '0.250', '0.250', '0.250']
attL_top10_sum : ['0.250', '0.250', '0.250', '0.250']
attL_top25_mean : ['0.251', '0.249', '0.249', '0.251']
attL_top25_sum : ['0.250', '0.250', '0.250', '0.250']
attL_top50_mean : ['0.252', '0.247', '0.249', '0.253']
attL_top50_sum : ['0.251', '0.244', '0.250', '0.255']

4. Chosen action and reward
Action: take into other
Reward: 0 | Score: 5

1. Textual obs:
o_desc: Tunnel You are in a narrow tunnel whose entrance has been blocked by gigantic, translucent boulders. Your only option is to continue to the northeast, where the tunnel gradually widens.
o_inv: You are carrying: a cheaply-made sword a brass lantern (providing light)
o_feed: (the tunnel) As you enter the tunnel, you feel a slight rumble beneath your crepe-soled boots. As you turn to look
back up to the exit, giant, translucent boulders begin to fall from the walls and ceiling. You duck and cover your head — when the dust clears, you feel your heart sink in your chest. You are trapped! Tunnel You are in a narrow tunnel whose entrance has been blocked by gigantic, translucent boulders. Your only option is to continue to the northeast, where the tunnel gradually widens.

a_past: take into other

==== 2. newly extracted triplets
[('Tunnel', 'has', 'exit to east'), ('Tunnel', 'has', 'exit to north'), ('Tunnel', 'has', 'exit to northeast'), ('Tunnel', 'has', 'exit to up'), ('all', 'in', 'narrow tunnel'), ('boulders', 'in', 'narrow tunnel'), ('ceiling', 'in', 'narrow tunnel'), ('entrance', 'has', 'has blocked by gigantic translucent boulders'), ('lantern', 'in', 'narrow tunnel'), ('northeast', 'in', 'narrow tunnel'), ('sword', 'in', 'narrow tunnel'), ('tunnel', 'in', 'narrow tunnel'), ('you', 'have', 'brass lantern (providing light)'), ('you', 'have', 'cheaply-made sword'), ('you', 'in', 'narrow'), ('you', 'in', 'narrow tunnel'), ('you', 'in', 'tunnel')]

==== 3. Attention values:

attH_max : ['0.251', '0.253', '0.243', '0.252']
attH_mean : ['0.277', '0.245', '0.228', '0.249']
attH_sum : ['1.000', '0.000', '0.000', '0.000']
attH_top10_mean : ['0.265', '0.262', '0.205', '0.268']
attH_top10_sum : ['0.327', '0.288', '0.024', '0.361']
attH_top25_mean : ['0.293', '0.252', '0.190', '0.265']
attH_top25_sum : ['0.903', '0.021', '0.000', '0.076']
attH_top50_mean : ['0.303', '0.241', '0.207', '0.249']
attH_top50_sum : ['1.000', '0.000', '0.000', '0.000']

attL_max : ['0.250', '0.251', '0.250', '0.250']
attL_mean : ['0.250', '0.250', '0.250', '0.250']
attL_sum : ['0.252', '0.247', '0.249', '0.251']
attL_top10_mean : ['0.250', '0.250', '0.250', '0.250']
attL_top10_sum : ['0.250', '0.250', '0.250', '0.250']
attL_top25_mean : ['0.248', '0.253', '0.249', '0.249']
attL_top25_sum : ['0.248', '0.255', '0.248', '0.249']
attL_top50_mean : ['0.250', '0.250', '0.250', '0.250']
attL_top50_sum : ['0.252', '0.247', '0.249', '0.251']

==== 4. Chosen action and reward

Action: east
Reward: 01 Score: 5

==== Step 8 ====

==== 1. Textual obs:
o_desc: Cultural Complex This imposing ante–room, the center of what was apparently the cultural center of the GUE, is adorned in the ghastly style of the GUE’s “Grotesque Period.” With leering gargoyles, cartoonish friezes depicting long–forgotten scenes of GUE history, and primitive statuary of pointy–headed personages unknown (perhaps very, very distant progenitors of the Flatheads), the place would have been left undiscovered. North of here, a large hallway passes under the roughly hewn inscription “Convention Center.” To the east, under a fifty–story triumphal arch, a passageway the size of a large city boulevard opens into the Royal Theater. A relatively small and unobtrusive sign (perhaps ten feet high)
stands nearby. South, a smaller and more dignified (i.e. post-Dimwit) path leads into what is billed as the "Hall of Science."

**o_inv:** You are carrying: a cheaply-made sword a brass lantern (providing light)

**o_feed:** Cultural Complex This imposing ante-room, the center of what was apparently the cultural center of the GUE, is adorned in the ghastly style of the GUE's "Grotesque Period." With leering gargoyles, cartoonish friezes depicting long-forgotten scenes of GUE history, and primitive statuary of pointy-headed personages unknown (perhaps very, very distant progenitors of the Flatheads), the place would have been best left undiscovered. North of here, a large hallway passes under the roughly hewn inscription "Convention Center." To the east, under a fifty-story triumphal arch, a passageway the size of a large city boulevard opens into the Royal Theater. A relatively small and unobtrusive sign (perhaps ten feet high) stands nearby. South, a smaller and more dignified (i.e. post-Dimwit) path leads into what is billed as the "Hall of Science."

**a_past:** east

==== 2. newly extracted triplets

[('Cultural Complex', 'has', 'exit to east'), ('all', 'in', 'Cultural Complex'), ('ante room', 'is', 'adorned'), ('ante room', 'is adorned in', 'ghastly style'), ('ante room', 'is adorned in', 'ghastly style of gue's grotesque period'), ('ante room', 'is adorned in', 'style'), ('ante room', 'is adorned in', 'style of gue's grotesque period'), ('cartoonish friezes', 'headed', 'personages'), ('cartoonish friezes', 'headed', 'personages unknown'), ('depicting', 'forgotten scenes of', 'gue history'), ('depicting', 'long forgotten scenes of', 'gue history'), ('depicting', 'long scenes of', 'gue history'), ('depicting', 'scenes of', 'gue history'), ('east', 'in', 'Cultural Complex'), ('friezes', 'headed', 'personages'), ('friezes', 'headed', 'personages unknown'), ('gue', 'of', 'grotesque period'), ('hallway', 'passes under', 'hewn inscription'), ('hallway', 'passes under', 'inscription'), ('hallway', 'passes under', 'roughly hewn inscription'), ('imposing ante room', 'is', 'adorned'), ('imposing ante room', 'is adorned in', 'ghastly style'), ('imposing ante room', 'is adorned in', 'ghastly style of gue's grotesque period'), ('imposing ante room', 'is adorned in', 'style'), ('imposing ante room', 'is adorned in', 'style of gue's grotesque period'), ('lantern', 'in', 'Cultural Complex'), ('large hallway', 'passes under', 'hewn inscription'), ('large hallway', 'passes under', 'inscription'), ('large hallway', 'passes under', 'roughly hewn inscription'), ('narrow tunnel', 'east of', 'Cultural Complex'), ('primitive statuary', 'headed', 'personages'), ('primitive statuary', 'headed', 'personages unknown'), ('primitive statuary', 'leering', 'gargoyles'), ('sign', 'in', 'Cultural Complex'), ('statuary', 'headed', 'personages'), ('statuary', 'headed', 'personages unknown'), ('statuary', 'in', 'Cultural Complex'), ('statuary', 'leering', 'gargoyles'), ('sword', 'in', 'Cultural Complex'), ('you', 'have', 'brass lantern (providing light)'), ('you', 'have', 'cheaply-made sword')]

==== 3. Attention values:

--- attH: o_desc, o_inv, o_feed, a_past

attH_max : ['0.251', '0.251', '0.248', '0.251']
attH_mean : ['0.282', '0.244', '0.231', '0.242']
atth_sum : ['1.000', '0.000', '0.000', '0.000']
atth_top10_mean : ['0.262', '0.257', '0.224', '0.257']
atth_top10_sum : ['1.000', '0.000', '0.000', '0.000']
atth_top25_mean : ['0.302', '0.249', '0.204', '0.245']
atth_top25_sum : ['0.987', '0.008', '0.000', '0.005']
atth_top50_mean : ['0.314', '0.238', '0.213', '0.234']
atth_top50_sum : ['1.000', '0.000', '0.000', '0.000']

attL: connectivity, item_in_room, item_in_inv, history

attL_max : ['0.249', '0.254', '0.248', '0.249']
atl_mean : ['0.251', '0.250', '0.250', '0.250']
atl_sum : ['0.284', '0.242', '0.226', '0.248']
atl_top10_mean : ['0.249', '0.252', '0.249', '0.250']
atl_top10_sum : ['0.243', '0.266', '0.241', '0.250']
atl_top25_mean : ['0.250', '0.251', '0.249', '0.250']
atl_top25_sum : ['0.247', '0.268', '0.234', '0.251']
atl_top50_mean : ['0.251', '0.250', '0.250', '0.250']
atl_top50_sum : ['0.284', '0.242', '0.226', '0.248']

==== 4. Chosen action and reward
Action: north
Reward: 0 | Score: 5

===== 5. Step 9 =====

===== 1. Textual obs: =====
o_desc: Convention Center Lobby You are standing at the entrance of the GUE Convention Center. On the floor, you can see occasional splotches of paint through the grime and dust. Although the whole cultural center appears to have been long-abandoned, loud, low-pitched sounds emanate from the door standing open to the north. Next to the door is a sign, and to the sign's left (northwest to you) is a souvenir stand. The cultural center's lobby lies to the south.
o_inv: You are carrying: a cheaply-made sword a brass lantern (providing light)
o_feed: Convention Center Lobby You are standing at the entrance of the GUE Convention Center. On the floor, you can see occasional splotches of paint through the grime and dust. Although the whole cultural center appears to have been long-abandoned, loud, low-pitched sounds emanate from the door standing open to the north. And while these sounds most closely approximate those made by under-lubricated granola fabricators, they nonetheless fill you with dread. Next to the door is a sign, and to the sign's left (northwest to you) is a souvenir stand. The cultural center's lobby lies to the south.
a_past: north

===== 2. newly extracted triplets
[('Convention Center Lobby', 'has', 'exit to north'), ('Convention Center Lobby', 'has', 'exit to northwest'), ('Convention Center Lobby', 'has', 'exit to south'), ('Convention Center Lobby', 'has', 'exit to west'), ('all', 'in', 'entrance of gue convention center'), ('door', 'in', 'entrance of gue convention center'), ('floor', 'in', 'entrance of gue convention center'), ('lantern', 'in', 'entrance of gue convention center'), ('narrow tunnel', 'north of', 'entrance of gue convention center'), ('north', 'in', 'entrance of gue convention center'), ('paint', 'in', 'entrance of gue convention center'), ('sign', 'in', 'entrance of gue convention center'), ('south', 'in', 'entrance of gue convention center')]

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convocation center'), ('sword', 'in', 'entrance of gue convocation center'), ('you', 'have', 'brass lantern (providing light)'), ('you', 'have', 'cheaply-made sword'), ('you', 'in', 'entrance'), ('you', 'in', 'entrance of gue convocation center')]

===== 3. Attention values:

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**attH:** o_desc, o_inv, o_feed, a_past

- **attH_max:** ['0.251', '0.251', '0.248', '0.250']
- **attH_mean:** ['0.297', '0.240', '0.225', '0.237']
- **attH_sum:** ['1.000', '0.000', '0.000', '0.000']
- **attH_top10_mean:** ['0.266', '0.254', '0.220', '0.261']
- **attH_top10_sum:** ['0.266', '0.254', '0.220', '0.261']
- **attH_top25_mean:** ['0.313', '0.247', '0.197', '0.243']
- **attH_top25_sum:** ['0.313', '0.247', '0.197', '0.243']
- **attH_top50_mean:** ['0.347', '0.229', '0.201', '0.223']
- **attH_top50_sum:** ['0.347', '0.229', '0.201', '0.223']

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**attL:** connectivity, item_in_room, item_in_inv, history

- **attL_max:** ['0.247', '0.249', '0.249', '0.254']
- **attL_mean:** ['0.250', '0.250', '0.250', '0.250']
- **attL_sum:** ['0.257', '0.250', '0.243', '0.250']
- **attL_top10_mean:** ['0.249', '0.250', '0.250', '0.251']
- **attL_top10_sum:** ['0.249', '0.250', '0.250', '0.251']
- **attL_top25_mean:** ['0.254', '0.250', '0.250', '0.250']
- **attL_top25_sum:** ['0.254', '0.250', '0.250', '0.250']
- **attL_top50_mean:** ['0.257', '0.250', '0.243', '0.250']
- **attL_top50_sum:** ['0.257', '0.250', '0.243', '0.250']

===== 4. Chosen action and reward

**Action:** northwest  
**Reward:** 0 | **Score:** 5

---

===== Step 10 =====

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1. Textual obs:

**o_desc:** Souvenir Stand You find yourself standing in front of a souvenir stand that is clearly affiliated with the Convention Center. An odd-looking salesman sits behind the counter, his head resting on his hand and his eyes glued to a spot somewhere above and behind you. A notice on the counter points toward a small, curtained room to the north. On the counter are four candy bars (a Baby Rune, a Multi-Implementers, a ZM$100000 and a Forever Gores), some popcorn, some postcards and a chicken finger. You can see a salesman here.

**o_inv:** You are carrying: a cheaply-made sword a brass lantern (providing light)

**o_feed:** Souvenir Stand You find yourself standing in front of a souvenir stand that is clearly affiliated with the Convention Center. An odd-looking salesman sits behind the counter, his head resting on his hand and his eyes glued to a spot somewhere above and behind you (a quick, frightened glance over your shoulder reveals nothing eye-catching; indeed, nothing at all.) A notice on the counter points toward a small , curtained room to the north. On the counter are four candy bars (a Baby Rune, a Multi-Implementers, a ZM$100000 and a Forever Gores), some popcorn, some postcards and a chicken finger. You can see a salesman here.

**a_past:** northwest

---

2. newly extracted triplets

[("Souvenir Stand", "has", "exit to north"): ("all", "in", "Souvenir Stand"), ("candy", "in", "Souvenir Stand"), ("counter", "in", "Souvenir Stand"), ("entrance of gue convention center")]

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center', 'north of', 'Souvenir Stand'), ('finger', 'in', 'Souvenir Stand'), ('gores', 'in', 'Souvenir Stand'), ('his eyes', 'glued to', 'spot'), ('his eyes', 'glued to', 'spot above'), ('his eyes', 'glued to', 'spot somewhere above'), ('his head', 'resting on', 'his hand'), ('lantern', 'in', 'Souvenir Stand'), ('looking salesman', 'sits behind', 'counter'), ('multi', 'in', 'Souvenir Stand'), ('north', 'in', 'Souvenir Stand'), ('notice', 'in', 'Souvenir Stand'), ('odd looking salesman', 'sits behind', 'counter'), ('odd salesman', 'sits behind', 'counter'), ('popcorn', 'in', 'Souvenir Stand'), ('postcards', 'in', 'Souvenir Stand'), ('rune', 'in', 'Souvenir Stand'), ('salesman', 'in', 'Souvenir Stand'), ('salesman', 'sits behind', 'counter'), ('sword', 'in', 'Souvenir Stand'), ('you', 'can see', 'salesman'), ('you', 'can see here', 'salesman'), ('you', 'have', 'brass lantern (providing light)'), ('you', 'have', 'cheaply-made sword')]

===== 3. Attention values:

---
attH: o_desc, o_inv, o_feed, a_past
attH_max: ['0.250', '0.250', '0.249', '0.250']
attH_mean: ['0.304', '0.235', '0.228', '0.233']
attH_sum: ['1.000', '0.000', '0.000', '0.000']
attH_top10_mean: ['0.261', '0.247', '0.237', '0.255']
attH_top10_sum: ['0.367', '0.205', '0.138', '0.289']
attH_top25_mean: ['0.317', '0.238', '0.207', '0.238']
attH_top25_sum: ['0.998', '0.001', '0.000', '0.001']
attH_top50_mean: ['0.362', '0.218', '0.205', '0.215']
attH_top50_sum: ['1.000', '0.000', '0.000', '0.000']

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attL: connectivity, item_in_room, item_in_inv, history
attL_max: ['0.250', '0.251', '0.249', '0.250']
attL_mean: ['0.250', '0.250', '0.250', '0.250']
attL_sum: ['0.253', '0.266', '0.241', '0.241']
attL_top10_mean: ['0.250', '0.250', '0.250', '0.250']
attL_top10_sum: ['0.250', '0.250', '0.250', '0.250']
attL_top25_mean: ['0.250', '0.250', '0.250', '0.250']
attL_top25_sum: ['0.250', '0.250', '0.250', '0.250']
attL_top50_mean: ['0.250', '0.250', '0.250', '0.250']
attL_top50_sum: ['0.250', '0.250', '0.250', '0.250']

===== 4. Chosen action and reward
Action: talk to salesman
Reward: 0 | Score: 5

----- Step 11 -----

1. Textual obs:
o_desc: Souvenir Stand You find yourself standing in front of a souvenir stand that is clearly affiliated with the Convention Center. An odd-looking salesman sits behind the counter, his head resting on his hand and his eyes glued to a spot somewhere above and behind you. A notice on the counter points toward a small, curtained room to the north. On the counter are four candy bars (a Baby Rune, a Multi—Implementeers, a ZMS$100000 and a Forever Gores), some popcorn, some postcards and a chicken finger. You can see a salesman here. The salesman, losing interest in you, leans back and resumes whatever it was he was doing (staring, mostly.)
o_inv: You are carrying: a cheaply-made sword a brass lantern (providing light) The salesman, losing interest in you, leans back and resumes whatever it was he was doing (staring, mostly.)
Although not much of a conversationalist, the salesman leans forward to listen. Two things are immediately obvious: 1) He is not a regular user of toothpaste or mouthwash and 2) He is obviously wearing a mask.

a_past: talk to salesman

===== 2. newly extracted triplets

[( 'Souvenir Stand', 'has', 'exit to north' ), ( 'all', 'in', 'Souvenir Stand' ), ( 'candy', 'in', 'Souvenir Stand' ), ( 'finger', 'in', 'Souvenir Stand' ), ( 'gores', 'in', 'Souvenir Stand' ), ( 'he', 'is', 'regular' ), ( 'he', 'is obviously wearing', 'mask' ), ( 'he', 'is wearing', 'mask' ), ( 'his eyes', 'glued to', 'spot' ), ( 'his eyes', 'glued to', 'spot above' ), ( 'his head', 'resting on', 'his hand' ), ( 'lantern', 'in', 'Souvenir Stand' ), ( 'looking salesman', 'sits behind', 'counter' ), ( 'mask', 'in', 'Souvenir Stand' ), ( 'multi', 'in', 'Souvenir Stand' ), ( 'north', 'in', 'Souvenir Stand' ), ( 'notice', 'in', 'Souvenir Stand' ), ( 'odd looking salesman', 'sits behind', 'counter' ), ( 'popcorn', 'in', 'Souvenir Stand' ), ( 'postcards', 'in', 'Souvenir Stand' ), ( 'rune', 'in', 'Souvenir Stand' ), ( 'salesman', 'in', 'Souvenir Stand' ), ( 'salesman', 'leans', 'listen' ), ( 'salesman', 'leans forward', 'listen' ), ( 'salesman', 'losing interest' ), ( 'salesman', 'losing interest in', 'you' ), ( 'salesman', 'sits behind', 'counter' ), ( 'sword', 'in', 'Souvenir Stand' ), ( 'you', 'can see', 'salesman' ), ( 'you', 'can see here', 'salesman' ), ( 'you', 'have', 'brass lantern (providing light)' ), ( 'you', 'have', 'cheaply-made sword' ), ( 'you', 'have', 'salesman, losing interest in you, leans back and resumes whatever it was he was doing (staring, mostly.)' )]

===== 3. Attention values:

--- attH: o_desc, o_inv, o_feed, a_past
attH_max : [ '0.252', '0.251', '0.248', '0.250' ]
attH_mean : [ '0.305', '0.231', '0.232', '0.232' ]
attH_sum : [ '1.000', '0.000', '0.000', '0.000' ]
attH_top10_mean : [ '0.266', '0.242', '0.241', '0.251' ]
attH_top10_sum : [ '0.429', '0.167', '0.160', '0.244' ]
attH_top25_mean : [ '0.320', '0.225', '0.223', '0.232' ]
attH_top25_sum : [ '0.999', '0.000', '0.000', '0.000' ]
attH_top50_mean : [ '0.358', '0.213', '0.215', '0.215' ]
attH_top50_sum : [ '1.000', '0.000', '0.000', '0.000' ]

--- attL: connectivity, item_in_room, item_in_inv, history
attL_max : [ '0.250', '0.250', '0.250', '0.250' ]
attL_mean : [ '0.250', '0.250', '0.250', '0.250' ]
attL_sum : [ '0.253', '0.251', '0.248', '0.248' ]
attL_top10_mean : [ '0.250', '0.250', '0.250', '0.250' ]
attL_top10_sum : [ '0.250', '0.250', '0.250', '0.250' ]
attL_top25_mean : [ '0.250', '0.250', '0.250', '0.250' ]
attL_top25_sum : [ '0.251', '0.253', '0.248', '0.248' ]
attL_top50_mean : [ '0.250', '0.250', '0.250', '0.250' ]
attL_top50_sum : [ '0.253', '0.251', '0.248', '0.248' ]

===== 4. Chosen action and reward
Action: throw mask
Reward: 8 | Score: 13

==== 1. Textual obs:
o_desc: Souvenir Stand You find yourself standing in front of a souvenir stand that is clearly affiliated with the Convention Center. A notice on the counter points toward a small, curtained room to the north. On the counter are four candy bars (a Baby Rune, a Multi-Implementers, a ZMS100000 and a Forever Gores), some popcorn, some postcards and a chicken finger.

o_inv: You are carrying: a cheaply-made sword a brass lantern (providing light)

o_feed: (first taking the mask) With the salesman's hot, fetid breath threatening to exfoliate multiple layers of facial epidermis, you quickly pull the mask from his face. In hellish harmony, two terrifying screams fill the air: yours, as the first human to see a grue; and his, as prelude to a graphic demonstration of why it is that they aren't seen by light of day (to wit: spontaneous grueish combustion, leaving only a greasy slick on the ground by your feet.) Although you will spend the rest of your life trying to forget what you have just seen, the sight of that sickly glowing fur, fish-mouthed face and razor-like fingers remains forever etched in your mind. You throw the mask away in horror at what you've just seen. [Your score has just gone up by eight points.]

a_past: throw mask

==== 2. newly extracted triplets

facial epidermis'), ("salesman 's hot fetid breath", 'exfoliate', 'multiple layers'), ("salesman 's hot fetid breath", 'exfoliate', 'multiple layers of epidermis'), ("salesman 's hot fetid breath", 'exfoliate', 'multiple layers of facial epidermis'), ("sight", 'etched in', 'your mind'), ("sight", 'forever etched in', 'your mind'), ("sight", 'etched in', 'Souvenir Stand'), ("terrifying screams", 'fill', 'air'), ("terrifying screams", 'fill air in', 'harmony'), ("terrifying screams", 'fill air in', 'hellish harmony'), ("two terrifying screams", 'fill air in', 'harmony'), ("two terrifying screams", 'fill air in', 'hellish harmony'), ("you", 'first taking', 'mask'), ("you", 'first taking mask', "salesman 's breath threatening"), ("you", 'first taking mask', "salesman 's fetid breath threatening"), ("you", 'first taking mask', "salesman 's hot breath threatening"), ("you", 'first taking mask', "salesman 's hot fetid breath threatening"), ("you", 'have', 'brass lantern (providing light)'), ("you", 'have', 'cheaply-made sword'), ("you", 'pull', 'mask'), ("you", 'pull mask from', 'his face'), ("you", 'quickly pull mask from', 'his face'), ("you", 'rest of', 'your life'), ("you", 'taking', 'mask'), ("you", 'taking mask', "salesman 's breath threatening"), ("you", 'taking mask', "salesman 's fetid breath threatening"), ("you", 'taking mask', "salesman 's hot breath threatening"), ("you", 'taking mask', "salesman 's hot fetid breath threatening"), ("you", 'throw', 'mask'), ("you", 'throw mask', "you 've just seen"), ("you", 'throw mask', "you 've seen"), ("you", 'throw mask away', "you 've just seen"), ("you", 'throw mask away', "you 've seen"), ("you", 'throw mask away', "you 've seen"), ("you", 'throw mask away', "you 've seen"), ("you", 'throw mask away', 'horror'), ("you", 'throw mask away', 'horror'), ("you", 'will spend', 'rest'), ("you", 'will spend', 'rest of your life'), ("your score", 'has gone up by', 'eight points'), ("your score", 'has just gone up by', 'eight points')]

===== 3. Attention values:
—— attH: o_desc, o_inv, o_feed, a_past
attH_max : ['0.251', '0.251', '0.248', '0.250']
atth_mean : ['0.298', '0.236', '0.232', '0.234']
atth_sum : ['1.000', '0.000', '0.000', '0.000']
atth_top10_mean : ['0.260', '0.252', '0.239', '0.249']
atth_top10_sum : ['0.250', '0.250', '0.250', '0.250']
atth_top25_mean : ['0.311', '0.238', '0.221', '0.230']
atth_top25_sum : ['0.245', '0.255', '0.248', '0.252']
atth_top50_mean : ['0.348', '0.222', '0.214', '0.217']
atth_top50_sum : ['1.000', '0.000', '0.000', '0.000']
—— attL: connectivity, item_in_room, item_in_inv, history
attL_max : ['0.249', '0.251', '0.250', '0.250']
atthL_mean : ['0.250', '0.250', '0.250', '0.250']
atthL_sum : ['0.250', '0.250', '0.250', '0.250']
atthL_top10_mean : ['0.250', '0.250', '0.250', '0.250']
atthL_top10_sum : ['0.246', '0.253', '0.249', '0.251']
atthL_top25_mean : ['0.250', '0.250', '0.250', '0.250']
atthL_top25_sum : ['0.245', '0.255', '0.248', '0.252']
atthL_top50_mean : ['0.250', '0.250', '0.250', '0.250']
atthL_top50_sum : ['0.250', '0.250', '0.250', '0.250']

===== 4. Chosen action and reward
Action: lower multi
Reward: 11 Score: 14
==== Step 13 ====

1. Textual obs:

o_desc: Souvenir Stand You find yourself standing in front of a souvenir stand that is clearly affiliated with the Convention Center. A notice on the counter points toward a small, curtained room to the north. On the counter are three candy bars (a Baby Rune, a ZM$100000 and a Forever Gores), some popcorn, some postcards and a chicken finger. You can see a Multi-Implementers here.

o_inv: You are carrying: a cheaply-made sword a brass lantern (providing light)

o_feed: (first taking the Multi-Implementers) [Your score has just gone up by one point.] Dropped.

a_past: lower multi

2. newly extracted triplets

(['Souvenir Stand', 'has', 'exit to north'], ('Souvenir Stand', 'has', 'exit to up'), ('all', 'in', 'Souvenir Stand'), ('candy', 'in', 'Souvenir Stand'), ('chicken', 'in', 'Souvenir Stand'), ('counter', 'in', 'Souvenir Stand'), ('gores', 'in', 'Souvenir Stand'), ('lantern', 'in', 'Souvenir Stand'), ('multi', 'in', 'Souvenir Stand'), ('north', 'in', 'Souvenir Stand'), ('notice', 'in', 'Souvenir Stand'), ('popcorn', 'in', 'Souvenir Stand'), ('postcards', 'in', 'Souvenir Stand'), ('rune', 'in', 'Souvenir Stand'), ('sword', 'in', 'Souvenir Stand'), ('you', 'can see', 'multi implementers'), ('you', 'can see here', 'multi implementers'), ('you', 'have', 'brass lantern (providing light)'), ('you', 'have', 'cheaply-made sword'), ('your score', 'has gone up by', 'one point'), ('your score', 'has just gone up by', 'one point')]

3. Attention values:

---

attH: o_desc, o_inv, o_feed, a_past

attH_max: ['0.250', '0.250', '0.250', '0.250']
attH_mean: ['0.299', '0.236', '0.235', '0.230']
attH_sum: ['1.000', '0.000', '0.000', '0.000']
attH_top10_mean: ['0.258', '0.252', '0.243', '0.247']
attH_top10_sum: ['0.330', '0.268', '0.185', '0.217']
attH_top25_mean: ['0.312', '0.240', '0.228', '0.221']
attH_top25_sum: ['0.998', '0.001', '0.000', '0.000']
attH_top50_mean: ['0.351', '0.220', '0.219', '0.210']
attH_top50_sum: ['1.000', '0.000', '0.000', '0.000']

---

attL: connectivity, item_in_room, item_in_inv, history

attL_max: ['0.248', '0.252', '0.249', '0.252']
attL_mean: ['0.250', '0.249', '0.250', '0.251']
attL_sum: ['0.242', '0.219', '0.245', '0.294']
attL_top10_mean: ['0.248', '0.251', '0.249', '0.252']
attL_top10_sum: ['0.234', '0.257', '0.240', '0.269']
attL_top25_mean: ['0.249', '0.250', '0.249', '0.251']
attL_top25_sum: ['0.225', '0.253', '0.234', '0.288']
attL_top50_mean: ['0.250', '0.249', '0.250', '0.251']
attL_top50_sum: ['0.242', '0.219', '0.245', '0.294']

4. Chosen action and reward

Action: lower multi
Reward: 11 Score: 15

==== Step 14 ====

1. Textual obs:

o_desc: Souvenir Stand You find yourself standing in front of a souvenir stand that is clearly affiliated with the Convention Center. A notice on the counter points toward a small,
curtained room to the north. On the counter are three candy bars (a Baby Rune, a ZM$100000 and a Forever Gores), some popcorn, some postcards and a chicken finger. You can see a Multi-Implementeers here.

o_inv: You are carrying: a cheaply-made sword a brass lantern (providing light)

o_feed: (first taking the Multi-Implementeers) [Your score has just gone up by one point.] Dropped.

a_past: lower multi

===== 2. newly extracted triplets
[('Souvenir Stand', 'has', 'exit to north'), ('Souvenir Stand', 'has', 'exit to up'), ('all', 'in', 'Souvenir Stand'), ('candy', 'in', 'Souvenir Stand'), ('chicken', 'in', 'Souvenir Stand'), ('counter', 'in', 'Souvenir Stand'), ('gores', 'in', 'Souvenir Stand'), ('lantern', 'in', 'Souvenir Stand'), ('multi', 'in', 'Souvenir Stand'), ('north', 'in', 'Souvenir Stand'), ('notice', 'in', 'Souvenir Stand'), ('popcorn', 'in', 'Souvenir Stand'), ('Rune', 'in', 'Souvenir Stand'), ('sword', 'in', 'Souvenir Stand'), ('you', 'can see', 'multi implementeers'), ('you', 'can see here', 'multi implementeers'), ('you', 'have', 'brass lantern (providing light)'), ('you', 'have', 'cheaply-made sword'), ('your score', 'has gone up by', 'one point'), ('your score', 'has just gone up by', 'one point')]

===== 3. Attention values:

----- attH: o_desc, o_inv, o_feed, a_past
attH_max: ['0.250', '0.250', '0.250', '0.250']
atth_mean: ['0.299', '0.238', '0.232', '0.231']
atth_sum: ['1.000', '0.000', '0.000', '0.000']
atth_top10_mean: ['0.258', '0.252', '0.243', '0.247']
atth_top10_sum: ['0.334', '0.267', '0.180', '0.218']
atth_top25_mean: ['0.312', '0.245', '0.218', '0.225']
atth_top25_sum: ['0.997', '0.000', '0.000', '0.000']
atth_top50_mean: ['0.351', '0.224', '0.213', '0.211']
atth_top50_sum: ['1.000', '0.000', '0.000', '0.000']

----- attL: connectivity, item_in_room, item_in_inv, history
attL_max: ['0.249', '0.251', '0.249', '0.252']
atth_mean: ['0.250', '0.249', '0.250', '0.251']
atth_sum: ['0.249', '0.224', '0.246', '0.281']
atth_top10_mean: ['0.249', '0.251', '0.249', '0.251']
atth_top10_sum: ['0.250', '0.250', '0.250', '0.251']
atth_top25_mean: ['0.239', '0.256', '0.242', '0.263']
atth_top25_sum: ['0.249', '0.250', '0.250', '0.251']
atth_top50_mean: ['0.235', '0.250', '0.238', '0.277']
atth_top50_sum: ['0.249', '0.224', '0.246', '0.281']

===== 4. Chosen action and reward
Action: lower gores
Reward: ll Score: 16

===== Step 15 =====
You are carrying a cheaply-made sword a brass lantern (providing light)

[First taking the Forever Gores] [Your score has just gone up by one point.] Dropped.

2. newly extracted triplets

[('Souvenir Stand', 'has', 'exit to north'), ('Souvenir Stand', 'has', 'exit to up'), ('all', 'in', 'Souvenir Stand'), ('candy', 'in', 'Souvenir Stand'), ('chicken', 'in', 'Souvenir Stand'), ('counter', 'in', 'Souvenir Stand'), ('gores', 'in', 'Souvenir Stand'), ('lantern', 'in', 'Souvenir Stand'), ('multi', 'in', 'Souvenir Stand'), ('north', 'in', 'Souvenir Stand'), ('notice', 'in', 'Souvenir Stand'), ('popcorn', 'in', 'Souvenir Stand'), ('postcards', 'in', 'Souvenir Stand'), ('rune', 'in', 'Souvenir Stand'), ('sword', 'in', 'Souvenir Stand'), ('you', 'can see', 'two candy bars'), ('you', 'can see here', 'two candy bars'), ('you', 'have', 'brass lantern (providing light)'), ('you', 'have', 'cheaply-made sword'), ('your score', 'has gone up by', 'one point'), ('your score', 'has just gone up by', 'one point')]

3. Attention values:

attH: o_desc, o_inv, o_feed, a_past

attH_max : [0.250, 0.250, 0.250, 0.250]
atth_mean : [0.294, 0.234, 0.252, 0.219]
atth_sum : [1.000, 0.000, 0.000, 0.000]
atth_top10_mean : [0.261, 0.254, 0.254, 0.231]
atth_top10_sum : [0.353, 0.271, 0.272, 0.104]
atth_top25_mean : [0.313, 0.230, 0.273, 0.184]
atth_top25_sum : [0.966, 0.000, 0.034, 0.000]
atth_top50_mean : [0.342, 0.217, 0.251, 0.189]
atth_top50_sum : [1.000, 0.000, 0.000, 0.000]

attL: connectivity, item_in_room, item_in_inv, history

attL_max : [0.248, 0.251, 0.249, 0.251]
atll_mean : [0.250, 0.250, 0.250, 0.250]
atll_sum : [0.248, 0.229, 0.248, 0.275]
atll_top10_mean : [0.249, 0.251, 0.250, 0.251]
atll_top10_sum : [0.249, 0.256, 0.246, 0.260]
atll_top25_mean : [0.249, 0.250, 0.250, 0.251]
atll_top25_sum : [0.233, 0.255, 0.242, 0.270]
atll_top50_mean : [0.250, 0.250, 0.250, 0.250]
atll_top50_sum : [0.248, 0.229, 0.248, 0.275]

4. Chosen action and reward

Action: put multi on gores
Reward: 0 | Score: 16