Frames

Common Sense Reasoning

Lesson Preview

- Function of frames

- Properties of frames

- Relationship between frames and previous topics

- Frames for advanced sense-making

Ashok ate a frog.

Is the frog dead or alive?
- o dead
- o alive

Where is the frog?

- o on the table
- o on the floor

- o in Ashok's stomach

Is Ashok happy or sad?
- o happy
- o sad

Ashok ate a frog.

```
Ate
    subject : Ashok
    object : a frog
    location :
    time :
    utensils :
    object-alive : false
    object-is : in-subject
    subject-mood : happy
```

Ashok ate a frog.

```
Ate
        subject : Ashok
        object : a frog
        location :
        time :
        utensils :
        object-alive : false
        object-is : in-subject
        subject-mood : happy
```

David ate a pizza at home.

```
Ate
        subject : David
        object : a pizza
        location : at home
        time :
        utensils :
        object-alive : false
        object-is : in-subject
        subject-mood : happy
```

Angela ate lasagna with her dad last night at Olive Garden.

Ate

subject : Angela
object : lasagna
location : Olive Garden
time : night
utensils :
object-alive : false
object-is : in-subject
subject-mood : happy

```
Ate
        subject : Angela
        object : lasagna
        location : Olive Garden
        time : night
        utensils :
        object-alive : false
        object-is : in-subject
        subject-mood : happy
```

Ate

    subject :
    object : lasagna
    location :
    time :
    utensils :
    object-alive : false
    object-is : in-subject
    subject-mood : happy

Person

    name : Angela
    surname : Smith

Restaurant

    name : Olive Garden
    location : Atlanta
    price-range : $$

Properties of Frames

- Represent stereotypes

```
Ate
        subject : Ashok
        object : a frog
        location :
        time :
        utensils :
        object-alive :
        object-is :
        subject-mood :
```

Properties of Frames

- Represent stereotypes

- Provide default values

```
Ate

        subject : Ashok
        object : a frog
        location :
        time :
        utensils :
        object-alive : false

        object-is : in-subject

        subject-mood : happy
```

Properties of Frames

- Represent stereotypes

- Provide default values

```
Ate
        subject : Ashok
        object : a frog
        location :
        time :
        utensils :
        object-alive :
false
        object-is : in-
subject
        subject-mood : sad
```

```
Animal
        #-of-legs :
        #-of-arms :
```

```
Ant  (type of Animal)
        #-of-legs
: 6
        #-of-arms
: 0
```

```
Human  (type of Animal)
        #-of-legs
: 2
        #-of-arms
: 2
```

Properties of Frames

- Represent stereotypes

- Provide default values

- Exhibit inheritance

```
Animal
        #-of-legs :
        #-of-arms :
```

```
Ant   (type of Animal)
        #-of-legs
: 6
        #-of-arms
: 0
```

```
Human   (type of Animal)
        #-of-legs
: 2
        #-of-arms
: 2
        job :
        name :
```

Properties of Frames

- Represent stereotypes

- Provide default values

- Exhibit inheritance

```
Animal
        #-of-legs :
        #-of-arms :
```

Properties of Frames

- Represent stereotypes

- Provide default values

- Exhibit inheritance

```
Ant  (type of Animal)
        #-of-legs
: 6
        #-of-arms
: 0
```

```
Human  (type of Animal)
        #-of-legs
: 2
        #-of-arms
: 2
        job :
        name :
```

Class

```
Human (type of Animal)
        #-of-legs :
2
        #-of-arms :
2
        job :
Professor
        name : Ashok
```

Instance

```
Ate
    subject :                    Person
    object  :                        name :
    location :                   Haruto
    time : noon
    utensils :                   Pizza
                                     type :
                                 pepperoni

Restaurant
    name : Pizza
Hut
```
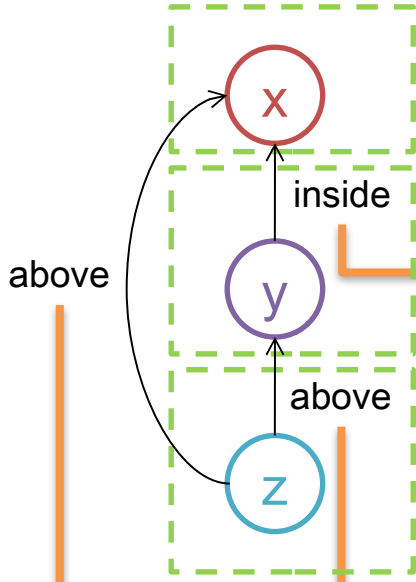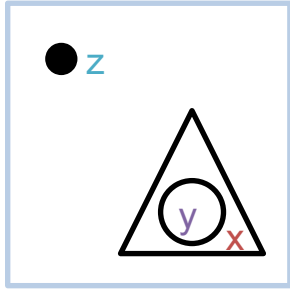
What sentence is expressed by these frames?

Haruto ate a pepperoni pizza at Pizza Hut at noon.
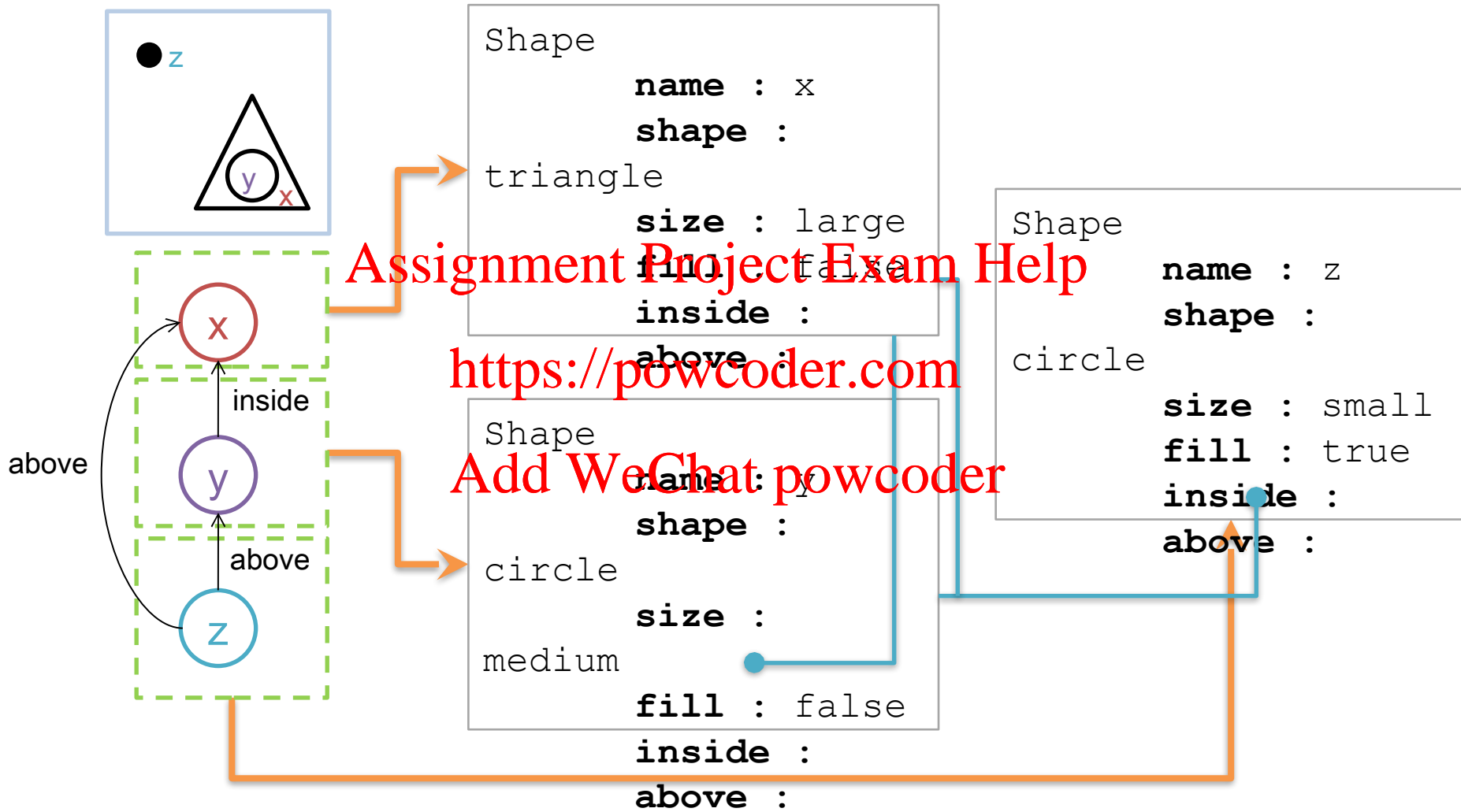
Shape

name : x

shape : triangle

size : large

fill : false

inside :

above :

Shape

name : y

shape : circle

size : medium

fill : false

inside :

above :

Shape

name : z

shape : circle

size : small

fill : true

inside :

above :

inside

above

above

Assignment Project Exam Help

https://powcoder.com

Add WeChat powcoder

Shape
        name : x
        shape :
triangle
        size : large
        fill : false
        inside :
        above :

Shape
        name : y
        shape :
circle
        size :
medium
        fill : false
        inside :
        above :

Shape
        name : z
        shape :
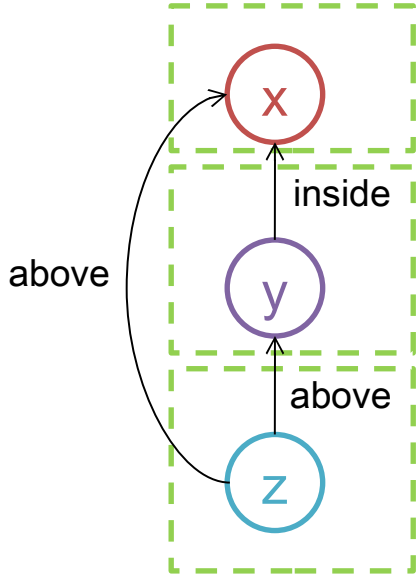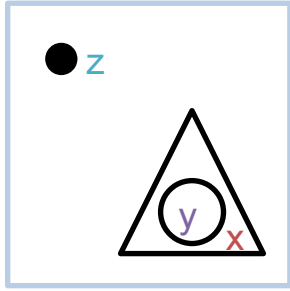circle
        size : small
        fill : true
        inside :
        above :

inside

above

above

Shape

name : x

shape : triangle

size : large

fill : false

inside :

above :

Shape

name : z

shape : circle

size : small

fill : true

inside :

above :

Shape

name : y

shape : circle

size : medium

fill : false

inside :

above :

inside

above

above

```
Shape
      name : x
      shape :
triangle
      size : large
      fill : false
      inside :
      above :
```

```
Shape
      name : y
      shape :
circle
      size :
medium
      fill : false
      inside : x
      above :
```
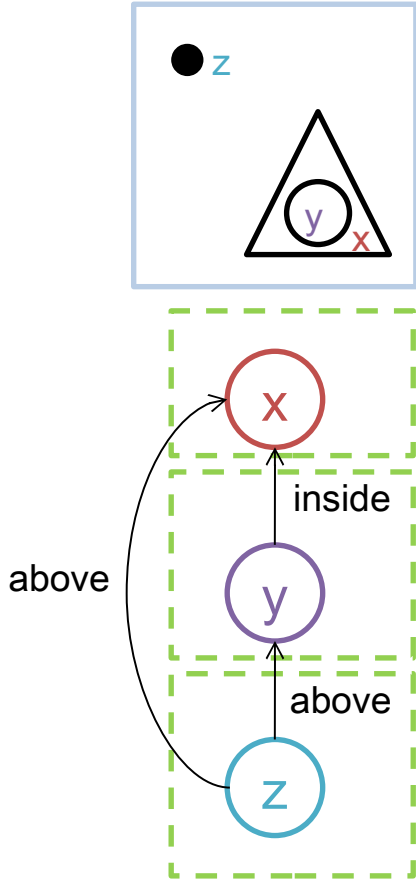
```
Shape
      name : z
      shape :
circle
      size : small
      fill : true
      inside :
      above : x, y
```
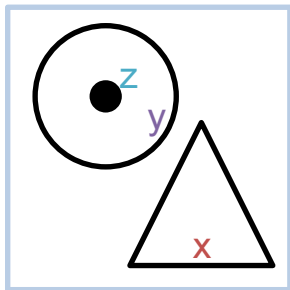
Complete the frame representation of the figure above.

Shape
    name : x
    shape : triangle
    size : large
    fill : false
    inside :
    above :

Shape
    name : z
    shape : circle
    size : small
    fill : true
    inside : y
    above : x

Shape
    name : circle
    shape :
    size : large
    fill : false
    inside :
    above : x

Cognitive System

Metacognition

Procedural | Semantic | Episodic

Working Memory

```
inning : 7th
portion : top
runners : 2nd and 3rd
outs : 2
batter : Pratt
average : .256
bats : right-handed
score : 3-2
goal : escape inning
```

Input

Output

Reaction

Cognitive System

Metacognition

Procedural Semantic Episodic

Input

Output

Working Memory

```
Ate
          subject :
          object :
          location :
          time :
          utensils :
          object-alive :

          object-is : in-
false
          subject-mood :
subject
happy
```

Reaction

Today, an extremely serious earthquake of magnitude 8.5 hit Lower Slabovia, killing 25 people and causing $500 million in damage. The President of Lower Slabovia said that the hard-hit area near the Sadie Hawkins fault has been a danger zone for years.

Write a frame representation of this story on the right.

```
Earthquake
        day : Today
        location : lower
Slabovia
        damage : $500 million
        fatalities :   25
        faultline : Sadie
Hawkins
        magnitude : 8.5
        time :
        type :
        duration :
```

Today, an extremely serious earthquake of magnitude 8.5 hit Lower Slabovia, killing 25 people and causing $500 million in damage. The President of Lower Slabovia said that the hard-hit area near the Sadie Hawkins fault has been a danger zone for years.

Today, the **President of Lower Slabovia killed 25** proposals totaling **$500 million** for research in **earthquake** prediction. Our Lower Slabovian correspondent calculates that **8.5** research proposals are rejected for every one approved. There are rumors that the President's science advisor, **Sadie Hawkins**, is at **fault**.

Assignment

How would you use frames to design an agent that could answer Raven's Progressive Matrices?

To recap...

- Structure of frames

- Properties of frames

- Frames with other representations

- Story understanding