AP CSP Python with CodeX
Algorithms #2 Activity Guide

Name:

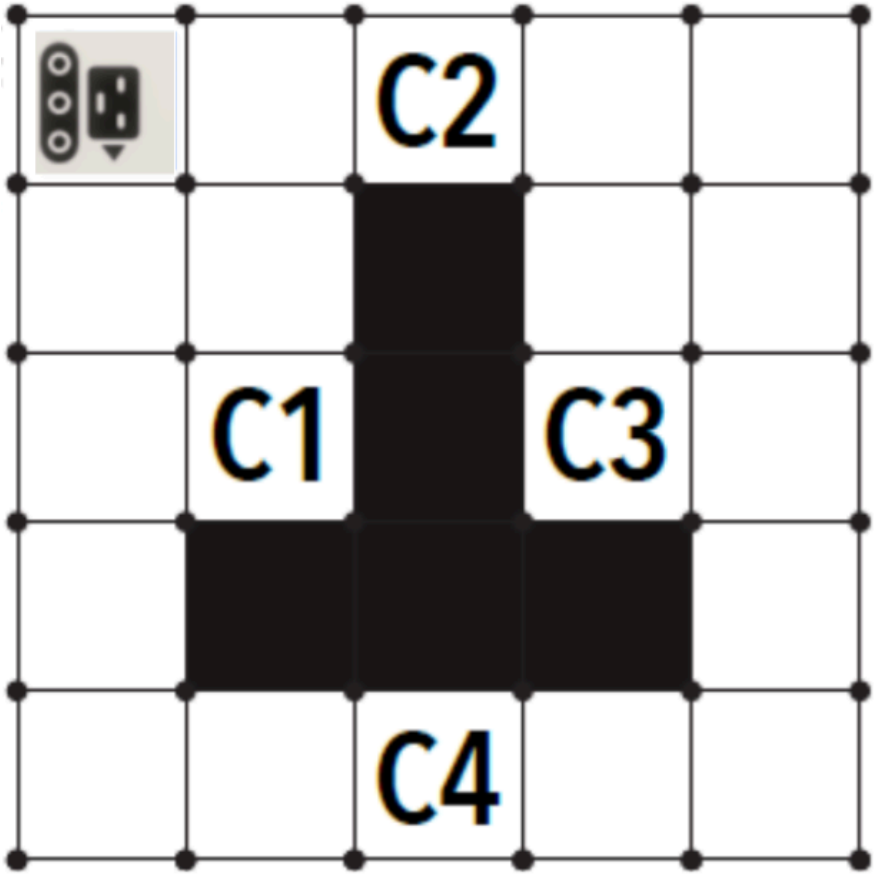
Robot Code : Solve this problem using the warehouse map and robot code.

Follow this program code. Which chute will the robot be guided to?

```
PROGRAM:
IF (CAN_MOVE(right))
{
    ROTATE_RIGHT()
    MOVE_FORWARD()
}
IF (CAN_MOVE(left))
{
    ROTATE_LEFT()
    MOVE_FORWARD()
}
IF (CAN_MOVE(right))
{
    ROTATE_RIGHT()
    MOVE_FORWARD()
}
MOVE_FORWARD()
```

Answers:

- **A. C1**
- B. C2
- C. C3
- D. C4

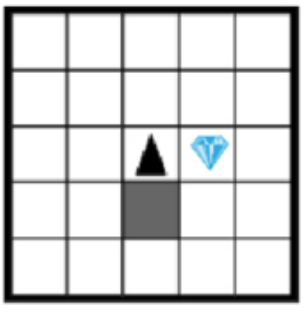


Robot Code: Use the Robot Map and code. Try each code in three different scenes. Determine if the robot will get the diamond, miss the diamond, or crash. The code may be written in block code, or text.

1. Program

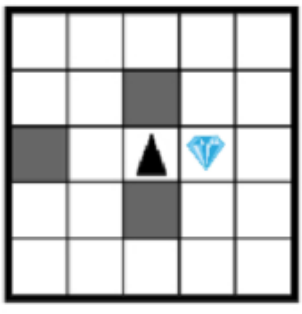
```
rotate_left()

if can_move(left):
   rotate_left()

move_forward()
move_forward()
```

Scene #1



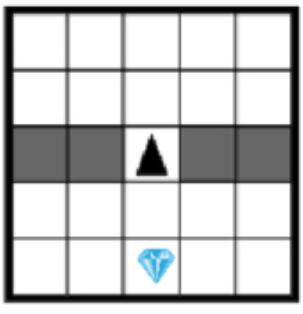
Answer: **Miss diamond**

Scene #2



Answer: **Crash**

Scene #3

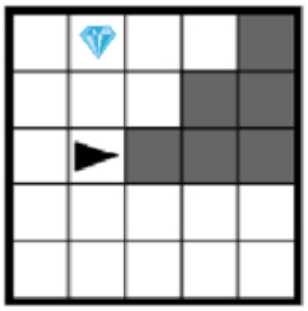


Answer: **Get diamond**

2. Program:

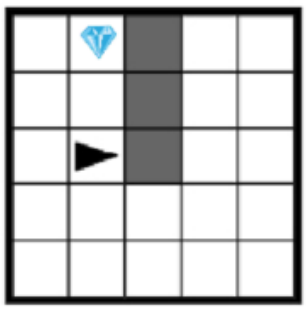
```
rotate_left()
if can_move(forward):
   move_forward()

rotate_right()
if can_move(forward):
   move_forward()

rotate_left()
if can_move(forward):
   move_forward()
```

Scene #1



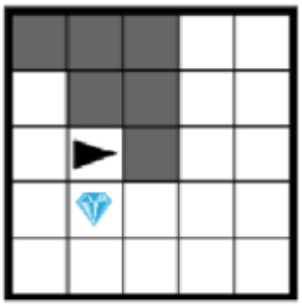
Answer:
Miss diamond

Scene #2



Answer:
Get diamond

Scene #3

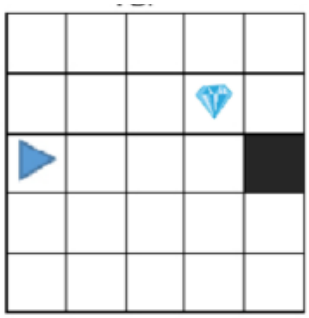


Answer:
Miss diamond

3. Program:

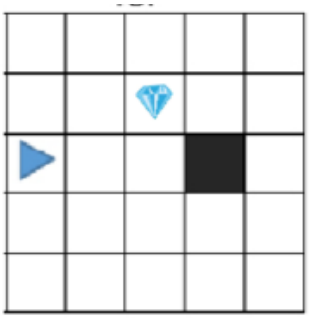
```
move_forward()

if can_move(forward):
   move_forward()
   move_forward()

rotate_left()
move_forward()
```

Scene #1



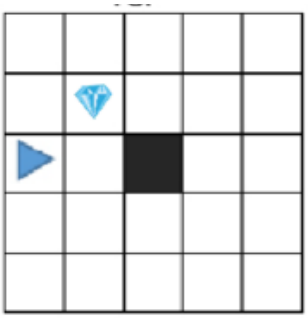
Answer:
Get diamond

Scene #2



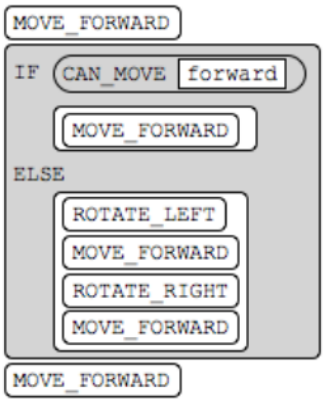
Answer:
Crash

Scene #3

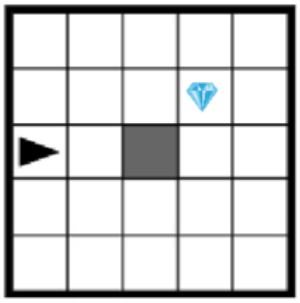


Answer:
Get diamond

4. Program:

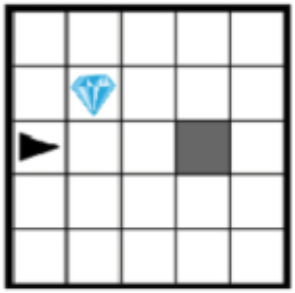


Scene #1



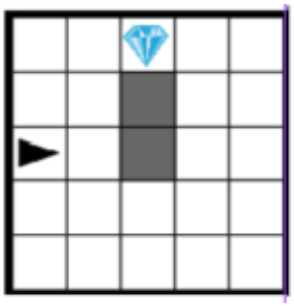
Answer:
Get diamond

Scene #2



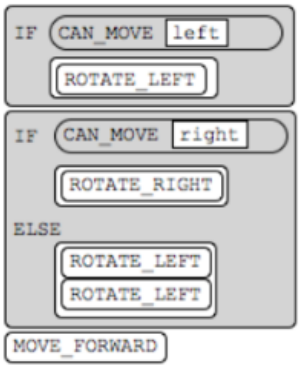
Answer:
Crash

Scene #3

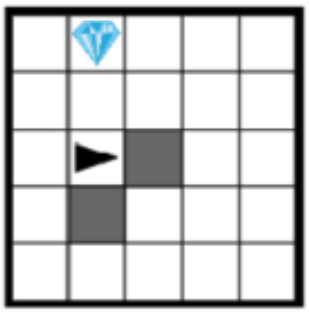


Answer:
Crash

5. Program:

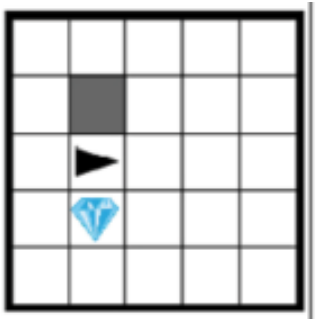


Scene #1



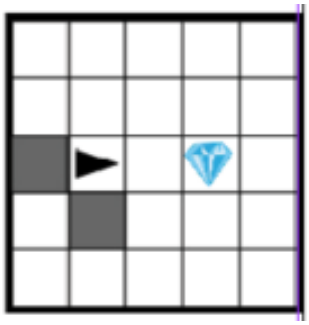
Answer:
Crash

Scene #2



Answer:
Get diamond

Scene #3



Answer:
Miss diamond

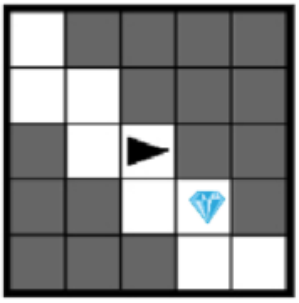
6. Program:

```
if can_move(left):
   rotate_left()
   move_forward()
else:
   rotate_right()
   move_forward()
if can_move(right):
   rotate_right()
else:
   rotate_left()
move_forward()
```

Scene #1

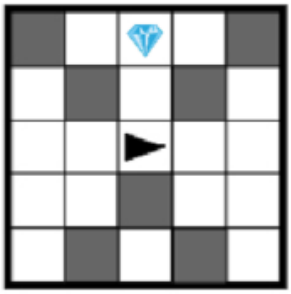
Answer: Miss diamond

Scene #2



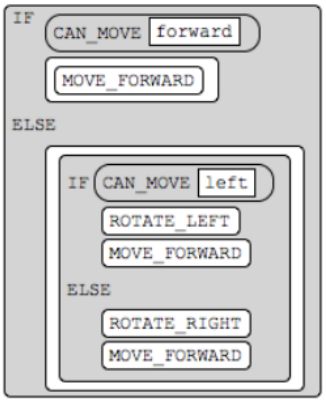
Answer: Get diamond

Scene #3

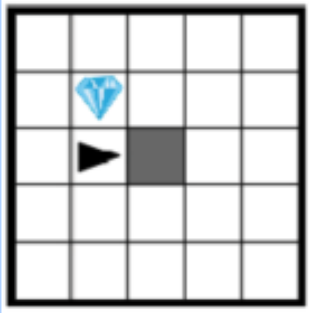


Answer: Crash

7. Program:



Scene #1

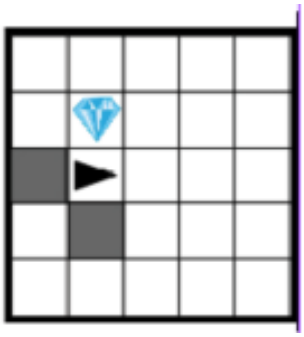


Answer: Get diamond

Scene #2

Answer: Get diamond

Scene #3



Answer: Miss diamond

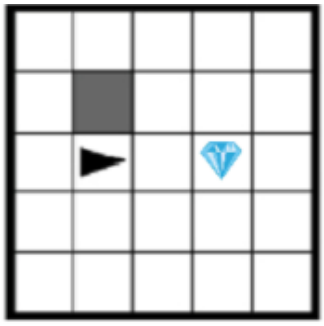
8. Program:

```
if can_move(forward):
  move_forward()
else:
  if can_move(left):
    rotate_left()
    move_forward()
  else:
    rotate_right()
    move_forward()

if not can_move(forward)):
  if can_move(left):
    rotate_left()
    move_left()
  else:
    rotate_right()
    move_right()
else:
  move_forward()
```

Scene #1

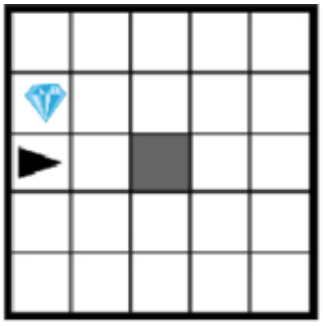
Answer: Crash

Scene #2



Answer: Get diamond

Scene #3



Answer: Miss diamond

Wrap-Up: Write your own program code for a robot to follow. Then use a grid to create three scenes. Trade your code and scenes with another student and determine the results.