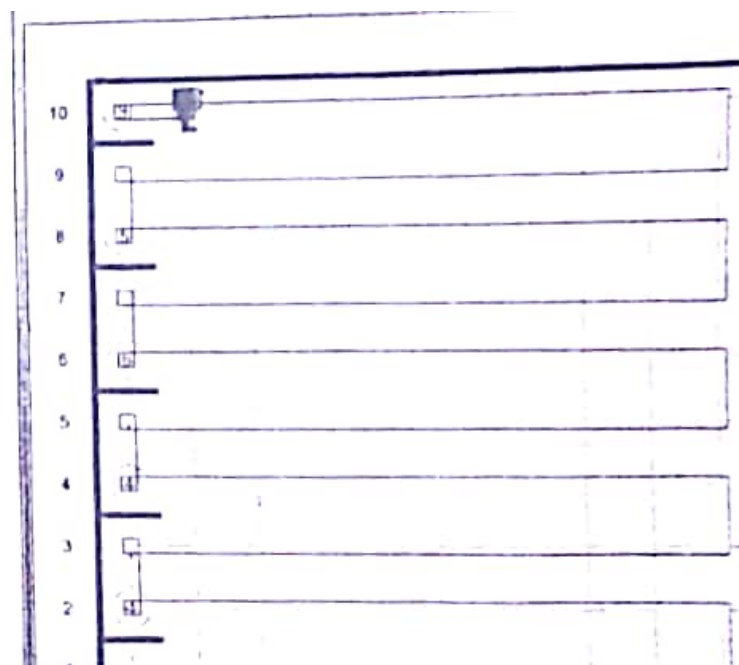
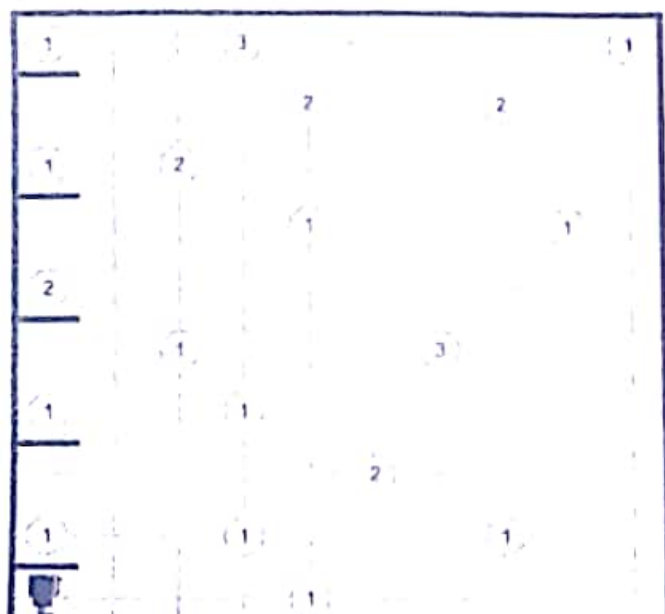




m.movec)
m.turn-left)
m.movec)
m.movec)

for i in range(1):
m.turn-left)
m.movec)
for i in range(9):

m.movec)
for i in range(9):

m.movec)
for i in range(9):
m.turn-left)

m.turn-left)
for i in range(3):
def r(c):
m = Robot



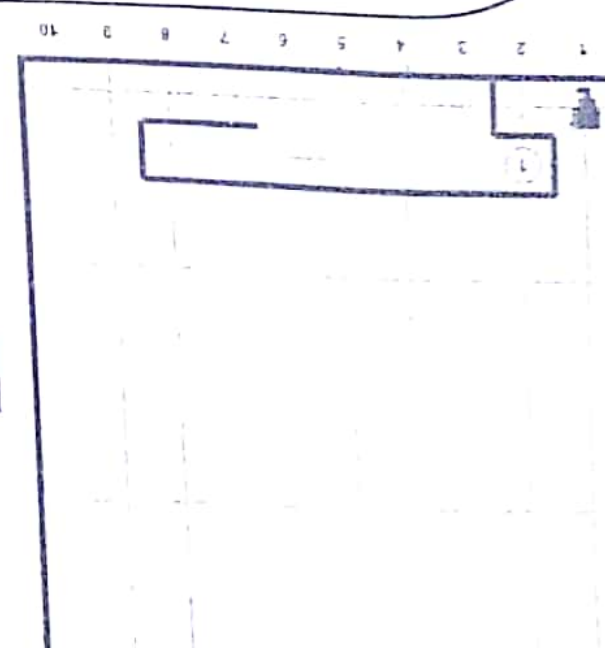
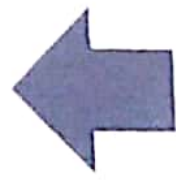
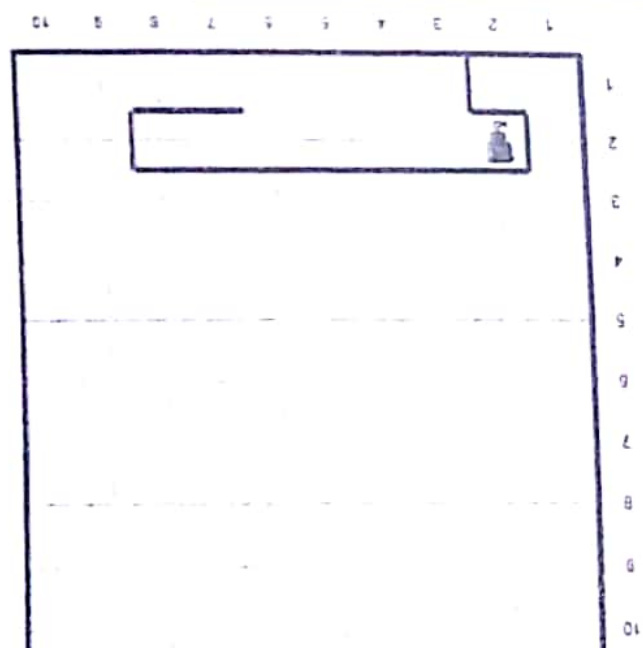
load - world (c:\python2\lib\world\world.py)
from cs1robot import *

16
24

m.pick-beep)
turn-left)
else:

m.movec)
m.front-is-clear)
m.movec)
if m.front-is-clear):
m.turn-left)
for i in range(3):
def r(c):
m = Robot

load - world (c:\python2\lib\world\world.py)
from cs1robot import *
way 2
way 1



Q3 [20 marks]. Write a while loop to produce the following output

@ @ @ @ @
@ @ @ @
@ @ @
@ @
@

```
i = 5  
while (i >= 1)  
    print "*" * i  
    i = i - 1
```

Q4 [20 marks]. What is the output of the following program?

```
def calculate(a, b, c, d):  
    x = a % b * c + 9 / 4 - d  
    print x  
calculate (2, 4, 2, 9)  
calculate (10, 4, 3, 5)
```

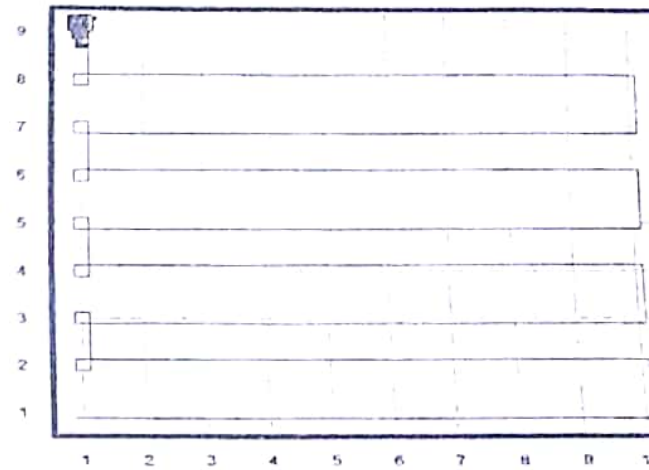
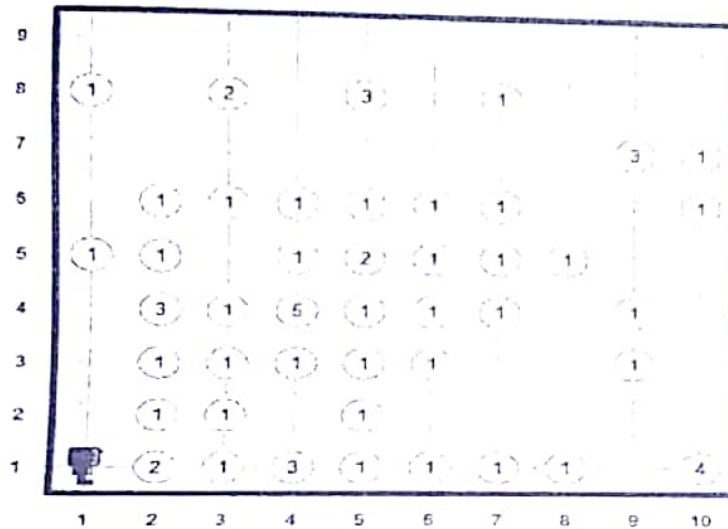
```
calculate (2, 4, 2, 9)  
x = 2 % 4 * 2 + 9 / 4 - 9  
x = 1 * 2 - 1  
x = 0  
calculate (10, 4, 3, 5)
```

```
x = 10 % 4 * 3 + 9 / 4 - 5  
= 2 * 3 - 1  
x = 5
```

Q2 [20 marks]. Write a pseudo code which moves a robot from the left figure to the right figure.

Input data file: "harvest.wld"

Output of program running



```

def right():
    for i in range(2):
        h.turn_left()
def pick_beeper():
    while not h.front_is_clear():
        h.pick_beeper()
        h.move()
    elif h.front_is_clear():
        front h.move
    else:
        h.turn_left()
        h.move()
        right()
def mc():
    for i in range(8):
        while not h.front_is_clear():
            h.pick_beeper()
        elif h.front_is_clear():
            h.move()
        else:

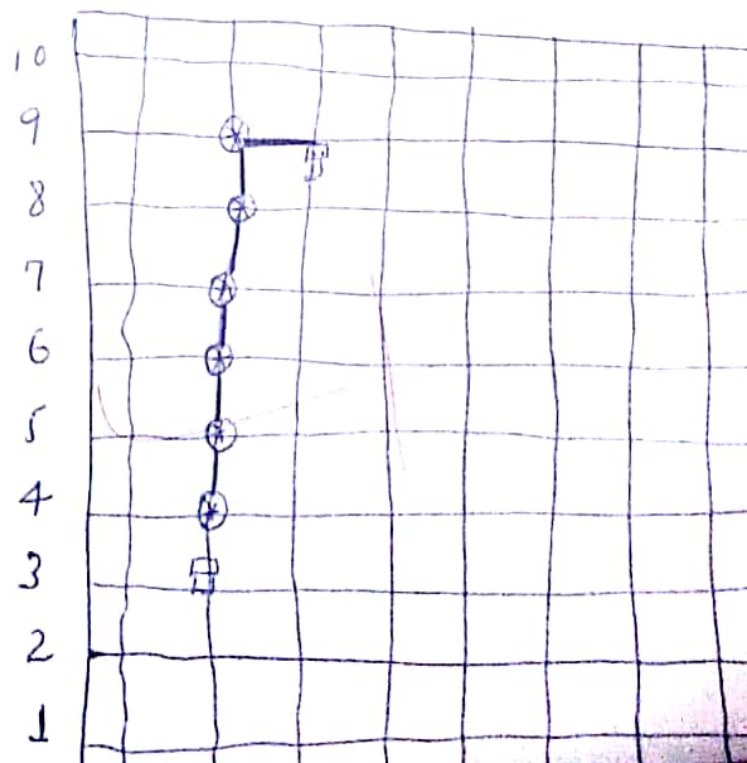
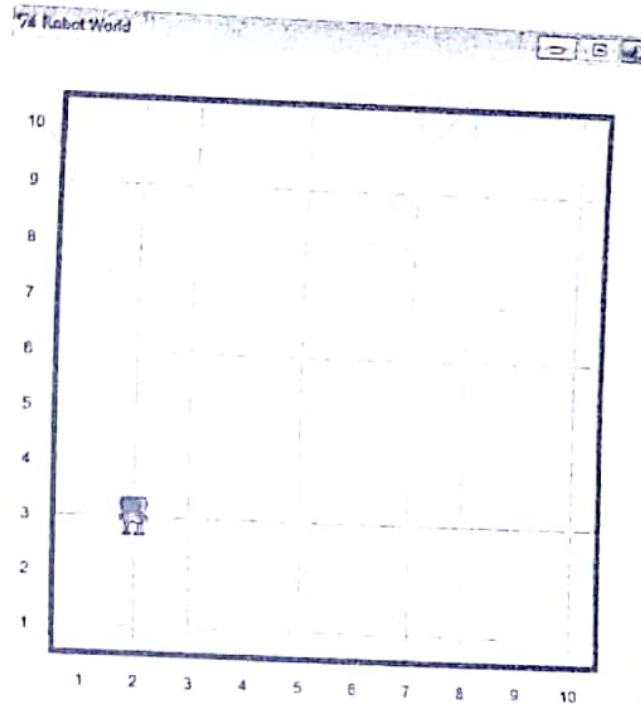
```

Q1B [10 marks]. Write the output of the following code on the world figure given next to this code. (selected)-

```
from cs1robots import *
create_world()
hubo=Robot(avenue=2,street=3,beepers=40,
           orientation="N")
hubo.set_trace("red")
hubo.set_pause(.9)

def turn_right():
    for j in range (3):
        hubo.turn_left()

def drop_move():
    while not hubo.on_beeper():
        for i in range(6):
            hubo.drop_beeper()
            hubo.move()
        turn_right()
        hubo.move()
        turn_right()
    drop_move()
```



```

from cs1robot import *
Load_world("worlds/test1.world")
h = Robot()
h.set_trace("Red")
h.set_pause(0.1)
def right():
    for i in range(3):
        h.turn_left()
    for i in range(8):
        if not h.front_is_clear():
            h.pick_beeper()
        elif h.front_is_clear():
            h.move()
        else:
            h.turn_left()

```

```

h.turn_left()
for i in range(6):
    h.move()
    h.turn_left()
    h.turn_left()
h.move()
h.move()
h.move()

```

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