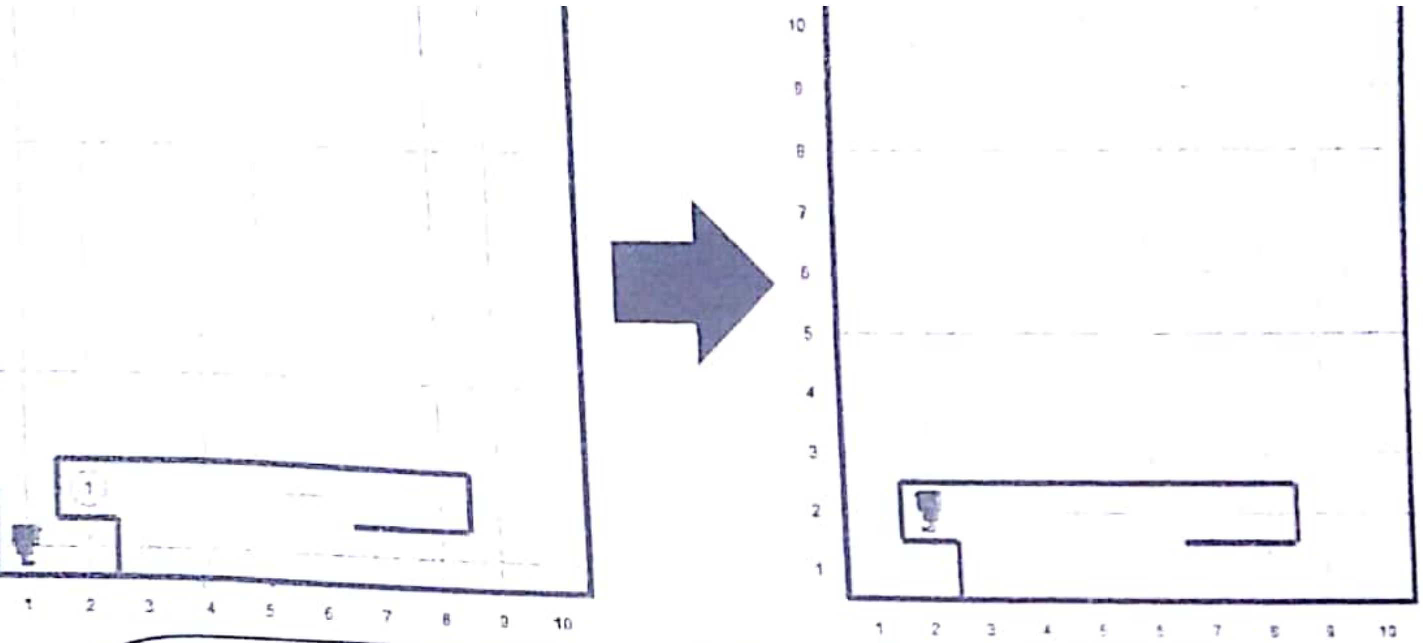


```
From csirobots import *
load - world("c:\python27\worlds\pic1.wld")
m=Robot()
def r():
    for i in range(3):
        m.turn-left()
m.turn-left()
for i in range(9):
    m.move()
r()
for i in range(9):
    m.move
r()
for i in range(9):
    m.move()
m.turn-left()
for i in range(7):
    m.move()
r()
m.move()
m.turn-left()
m.move()
```

or

```
From csirobots import *      way 2 (2nd option)
load-world("c:\python27\worlds\pi.wld")
m=Robot()
def r():
    for i in range(3):
        m.turn-left()
while not m.on-beeper():
    if m.right-is-clear():
        r()
        m.move()
    elif m.front-is-clear():
        m.move()
    else:
        turn-left()
m.pick-beeper()
```

12+4 = 16

Sorry !!!!!

Scanned by CamScanner

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?

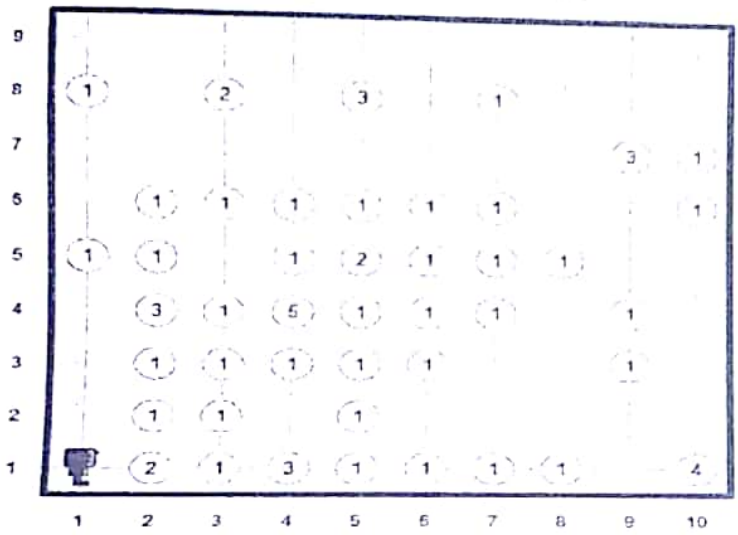
```
def calculate(a, b, c, d):
    x=a%b*c+9/4-d
    print x
calculate (2, 4, 2, 9)
calculate (10, 4, 3, 5)
```

```
calculate (2, 4, 2, 9)
x = a%b*c + 9/4-d
x = 2%4*2 + 9/4-9
x = 1/2*2 - 7
x = 0
calculate(10, 4, 3, 5)
```

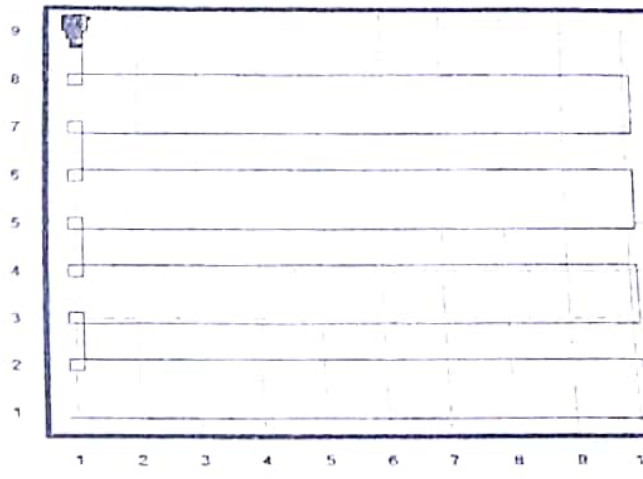
x = a%b*c + 9/4-d
= 10%4*3 + 9/4-5
= 2*3 - 1
X = 5

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

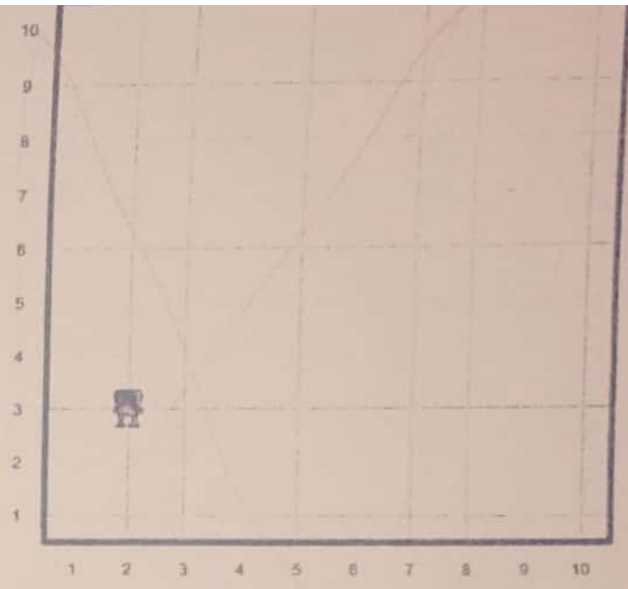


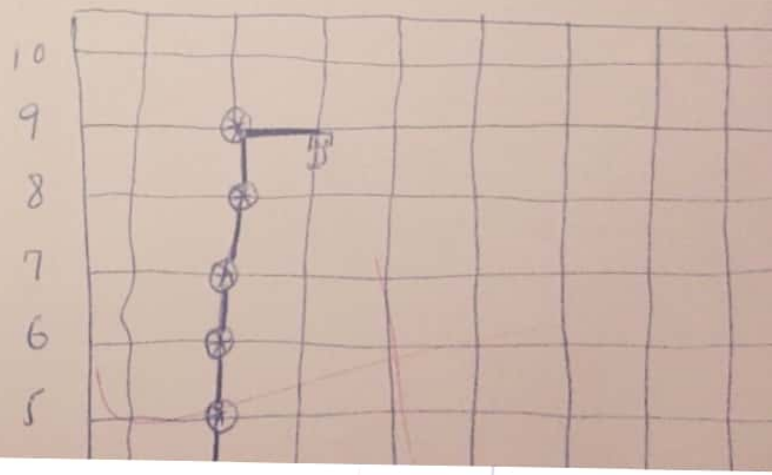
```
def right():
    For i in range(3):
        h.turn_left()
def pick_beeper():
    while not h.front_is_clear():
        h.pick_beeper()
        h.move()
    elif front_is_clear()
        h.move
    else:
        h.turn_left()
        h.move()
        right()
def m():
    for i in range(8):
        while not h.front_is_clear():
            h.pick_beeper()
    elif: Front_is_clear():
        h.move()
    else:
```

```
                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()
```

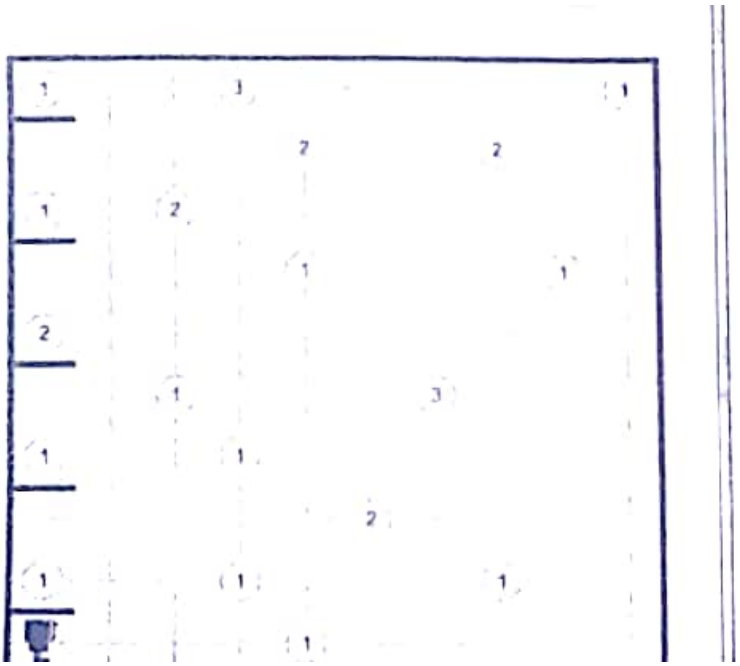


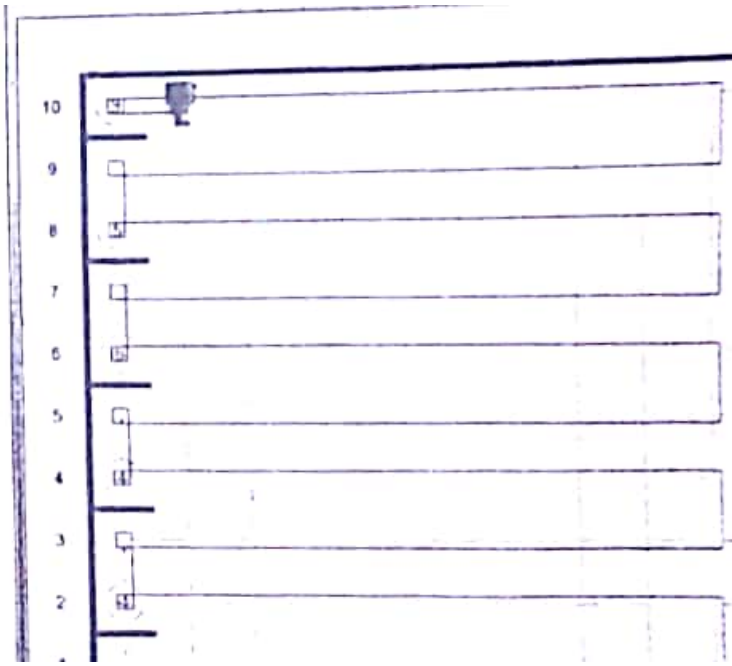


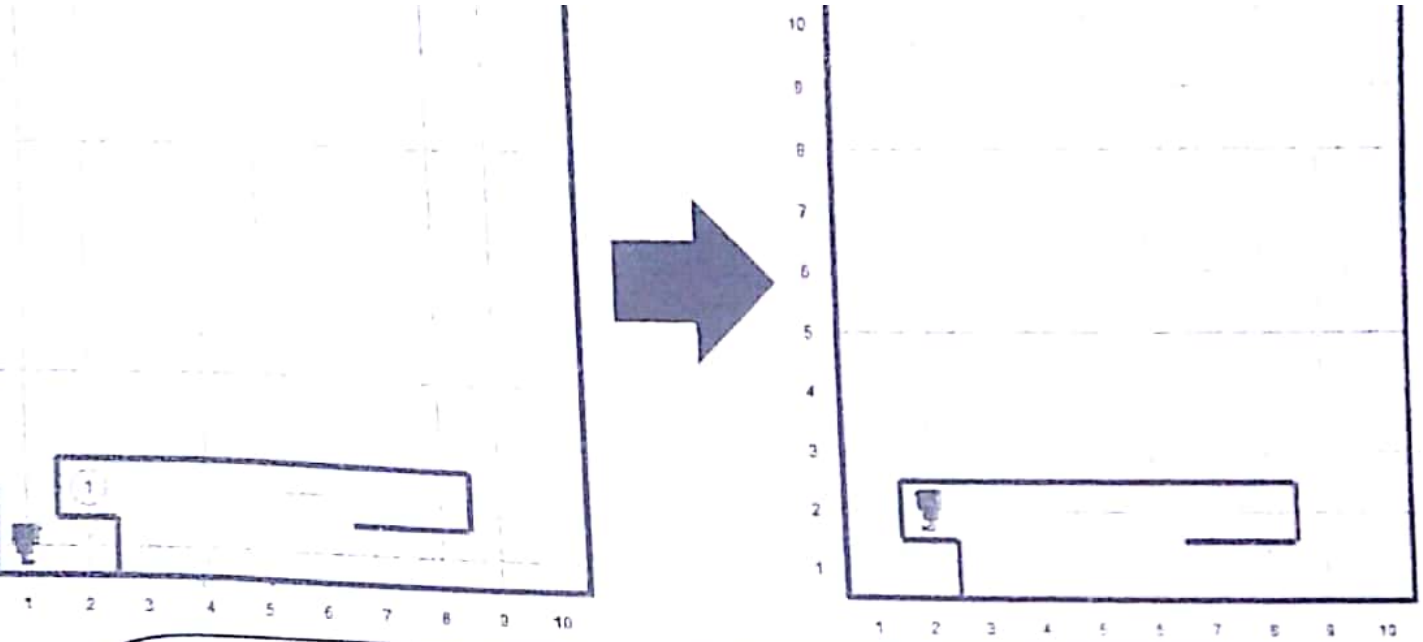
```
from cs1robots import *
load_world("worlds/test1.wld")
h = Robot()
h.set_trace("red")
h.set_pause(0.1)
def right():
    for i in range(3):
        h.turn_left()
for i in range(3):
    if not h.front_is_clear():
        h.pick_beeper()
    elif front_is_clear():
        h.move()
    else:
        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()
```

10







```
From csiroborts import *
load - world("c:\python27\worlds\pick.wld")
m=Robot()
def r():
    for i in range(3):
        m.turn-left()
m.turn-left()
for i in range(9):
    m.move()
r()
for i in range(9):
    m.move
r()
for i in range(9):
    m.move()
m.turn-left()
for i in range(7):
    m.move()
r()
m.move()
m.turn-left()
m.move()
```

or

way 2 (2nd option)

```
From csirobots import *
load-world('c:\python27\worlds\pi.wld')
m=Robot()
def r():
    for i in range(3):
        m.turn-left()
while not m.on-beeper():
    if [illegible] right-is-clear():
        r()
        m.move()
    elif m.front-is-clear():
        m.move
    else:
        turn-left()
m.pick-beeper()
```

12+4 = 16

Sorry !!!!!

Candy

Scanned by CamScanner

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?

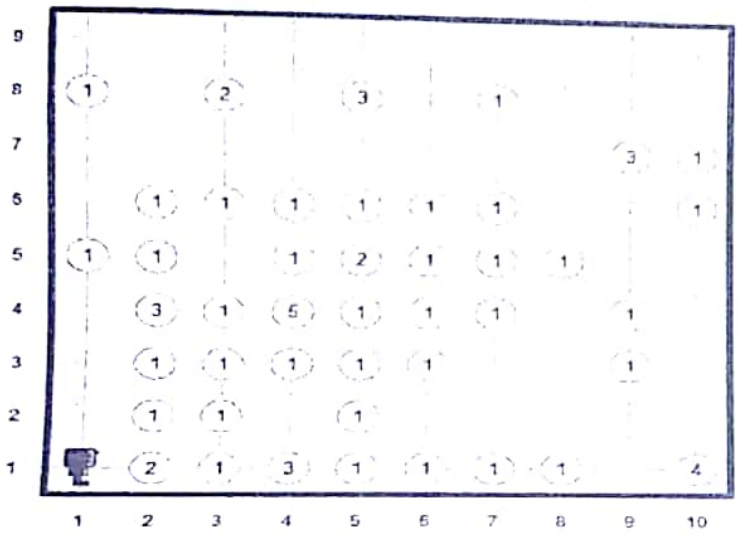
```
def calculate(a, b, c, d):
    x=a%b*c+9/4-d
    print x
calculate (2, 4, 2, 9)
calculate (10, 4, 3, 5)
```

```
calculate (2, 4, 2, 9)
x = a%b*c + 9/4-d
x = 2%4*2 + 9/4-9
x = 1/2*2 - 7
x = 0
calculate(10, 4, 3, 5)
```

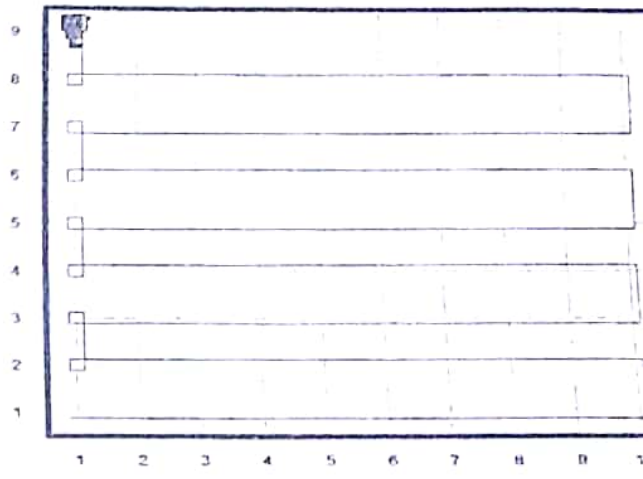
x = a%b*c + 9/4-d
= 10%4*3 + 9/4-5
= 2*3 - 1
X = 5

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



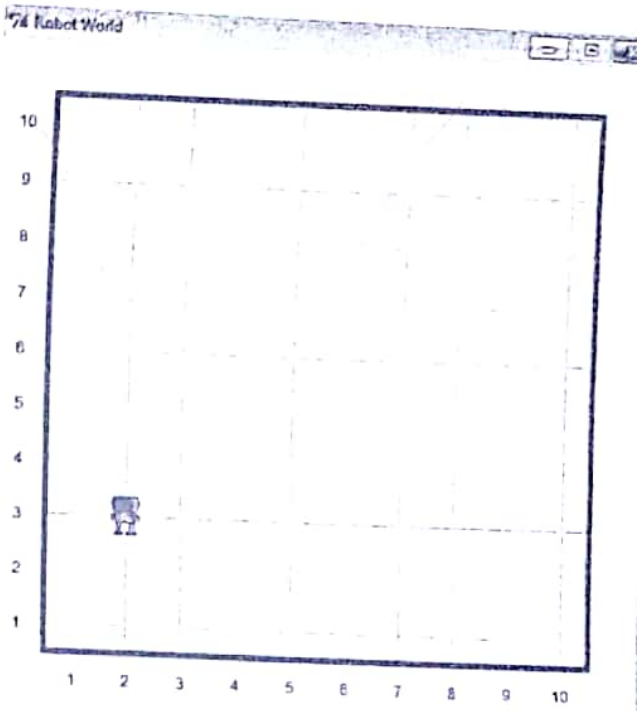
```
def right():
    For i in range(3):
        h.turn_left()
def pick_beeper():
    while not h.front_is_clear():
        h.pick_beeper()
        h.move()
    elif front_is_clear()
        h.move
    else:
        h.turn_left()
        h.move()
        right()
def m():
    for i in range(8):
        while not h.front_is_clear():
            h.pick_beeper()
    elif: Front_is_clear():
        h.move()
    else:
```

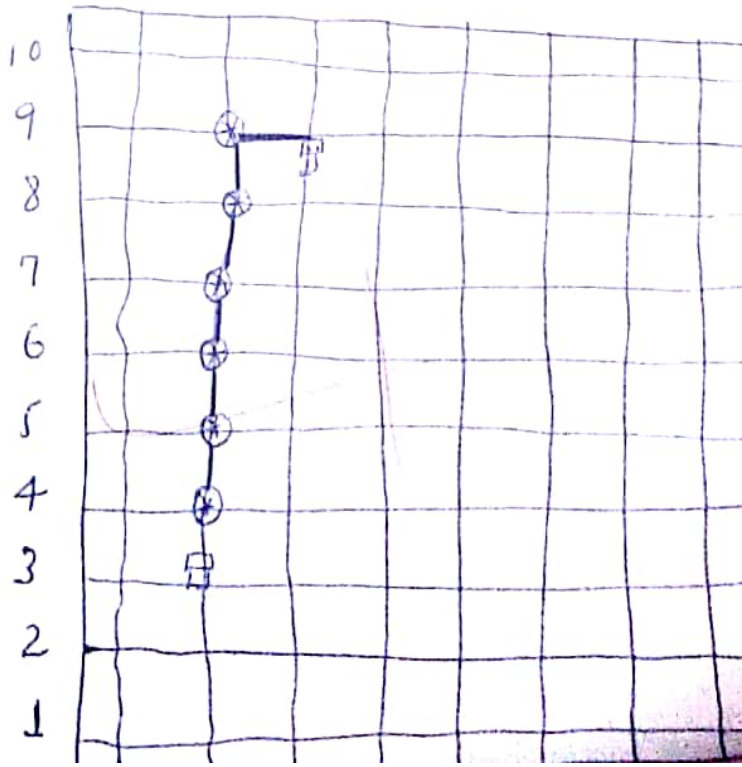
Q1B [10 marks]. Write the output of the following code on the world figure given next to this code.(selected)-

```
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()
```

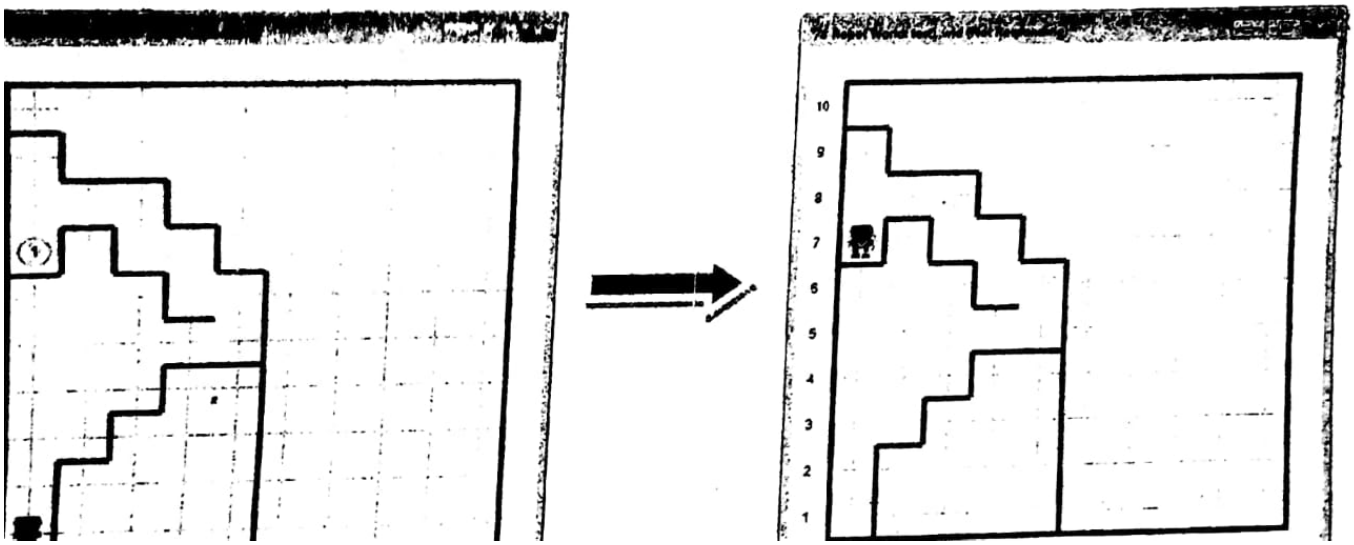


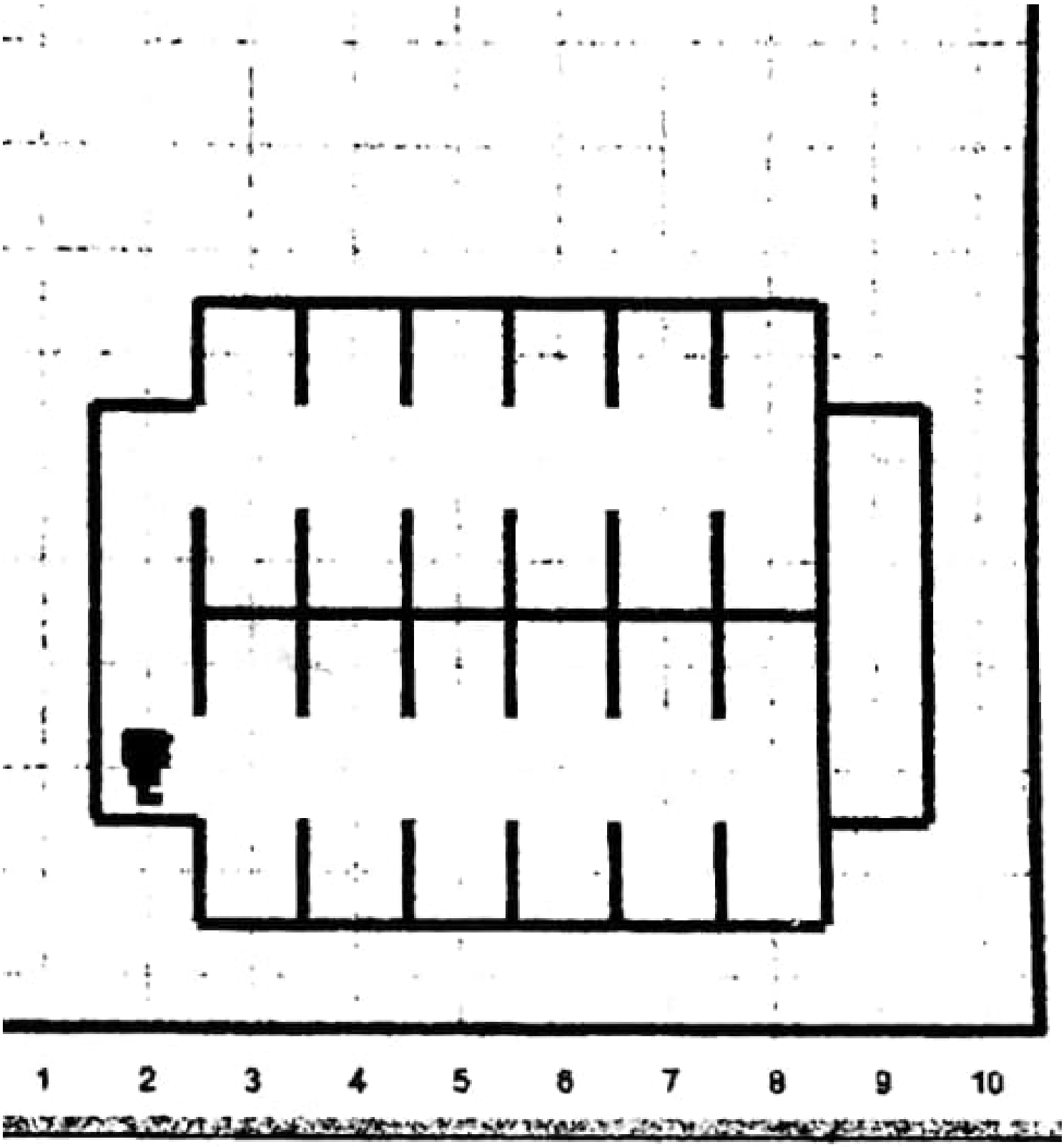


```
from cs1robots import *
load_world("worlds/test1.wld")
h = Robot()
h.set_trace("red")
h.set_pause(0.1)
def right():
    for i in range(3):
        h.turn_left()
for i in range(3):
    if not h.front_is_clear():
        h.pick_beeper()
    elif front_is_clear():
        h.move()
    else:
        h.turn_left()
```

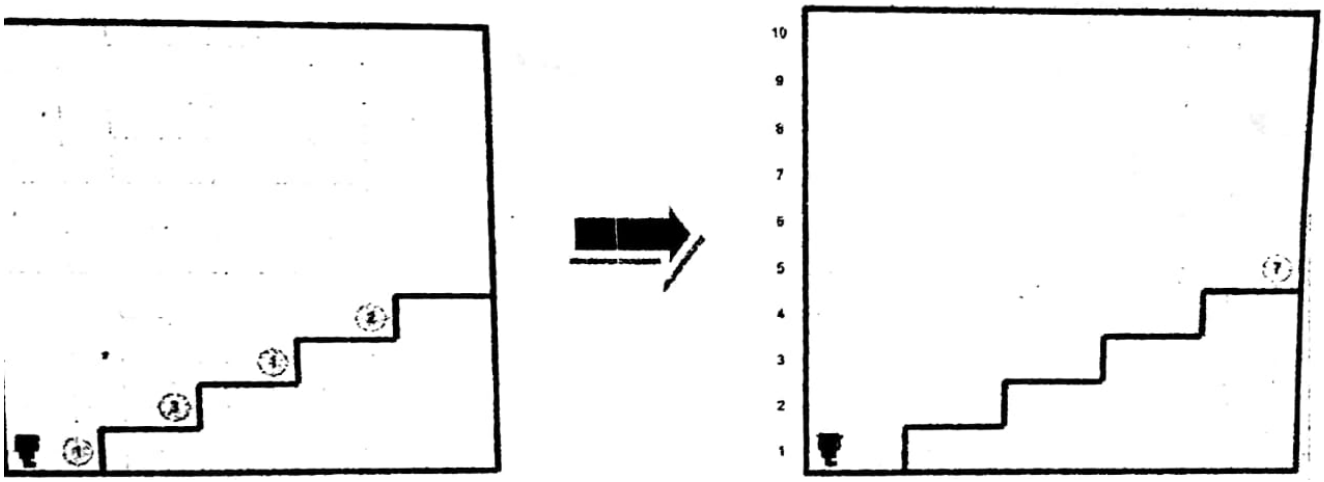
```
h.turn_left()
for i in range(6):
    h.move()
    h.turn_left()
    h.turn_left()
h.move()
h.move()
h.move()
```

10





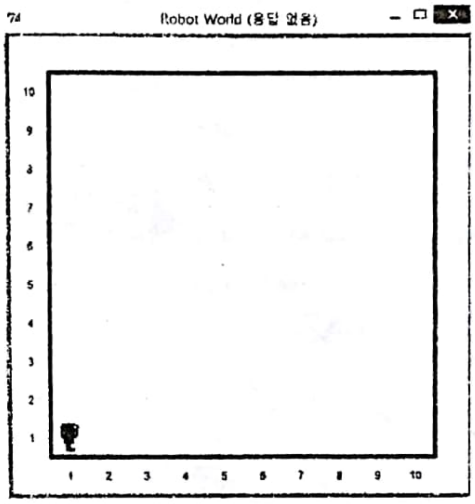
) Given the world in the left side,



Introduction to Computing Mid-exam 2008E.C.

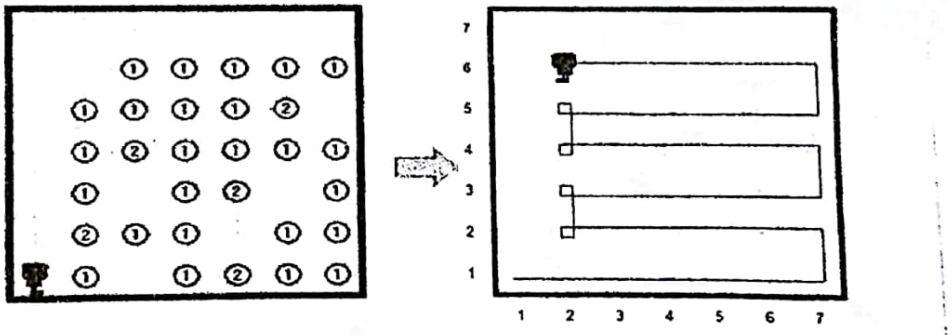
(20 pts) Write the output of the following code **on the world figure** given next to this code.

```
from cs1robots import *
create_world()
abc=Robot(beepers=50)
while not abc.on_beeper():
        for i in range(5):
            abc.drop_beeper()
            abc.move()
        abc.turn_left()
```



<figure> the world figure

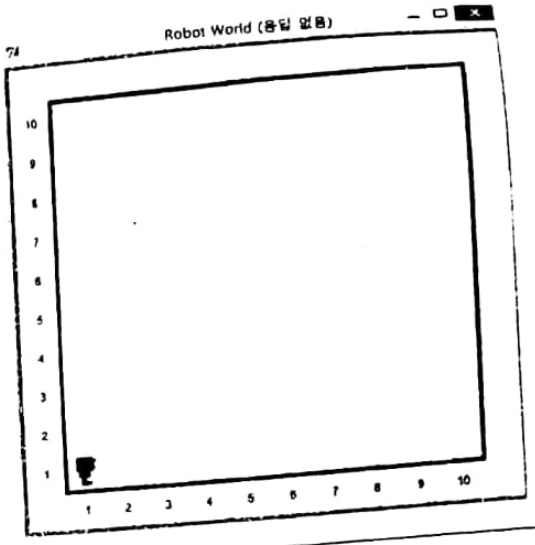
2. **(20 pts)** The input data is as the figure in the left figure. **Write pseudo codes or Python program** which make the robot move as the following right figure after the program is executed.



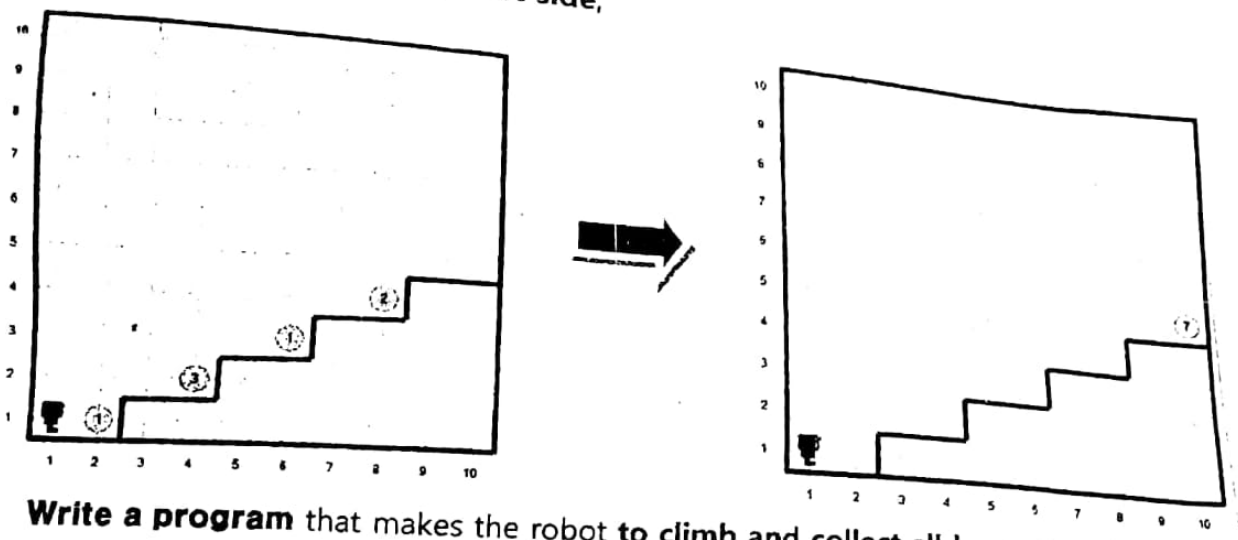
<starting of a robot> < end of a robot movements>

3 **(20 pts) Optimize** the following python **program code**, by modifying it using possible programming elements. Write the answer in the box. (Hint: the final code will have the same purpose as the original and smaller number of rows)

```
from cs1robots import *
create_world()
hubo=Robot()
hubo.set_trace("blue")
hubo.set_pause(0.2)
hubo.move()
hubo.move()
hubo.turn_left()
hubo.move()
hubo.move()
hubo.turn_left()
hubo.move()
hubo.move()
hubo.turn_left()
hubo.turn_left()
hubo.turn_left()
hubo.move()
hubo.turn_left()
hubo.turn_left()
hubo.turn_left()
hubo.move()
hubo.move()
hubo.turn_left()
hubo.move()
hubo.move()
hubo.turn_left()
hubo.move()
hubo.move()
```



(20 pts) **Given the world in the left side,**



Write a program that makes the robot **to climb and collect all beepers** and keep them at position (10,5) finally the robot returns back to its initial position(1,1) as shown in the right.

Introduction to Computing

(20 pts) **Write the output** of the following code **on th**

```
from cs1robots import *
create_world()
abc=Robot(beepers=50)
while not abc.on_beeper():
        for i in range(5):
            abc.drop_beeper()
            abc.move()
        abc.turn_left()
```

2. **(20 pts)** The input data is as the figure in the left fi
program which make the robot move as the following right

Name_____ ID_____ Group_____

3. write a program that check if a number is odd or even using function

Name [illegible] ID [illegible] Group 23

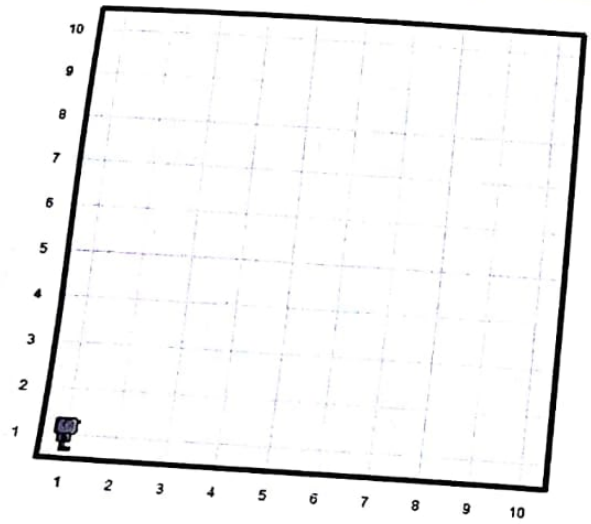
Adama Science and Technology University
School of Electrical Engineering and Computing
Computer Science and Engineering Program-CSE
Computational Thinking Quiz One

Instruction :

1. ***Answer the following questions clearly and neatly.***
2. ***Use function, conditional, and or loop when necessary***
3. ***Use meaningful variable and function naming***

1. Write a program to create a world of default size which is 10x10 as shown below

World before the program executes



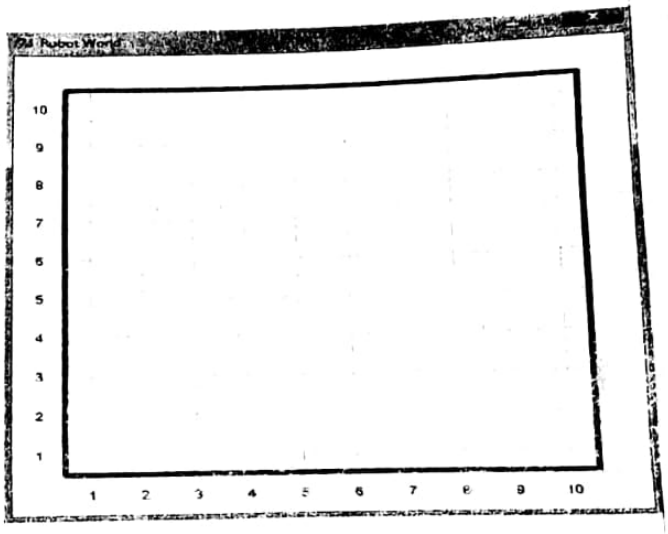
World after the program executes

1. **Write a Def function** by the name **triengle_area** which accepts **height** and **width** of **triangle** as arguments from the caller and **return** area of **triangle** to the caller and display it. **Read height and width of the triangle from the keyboard.**

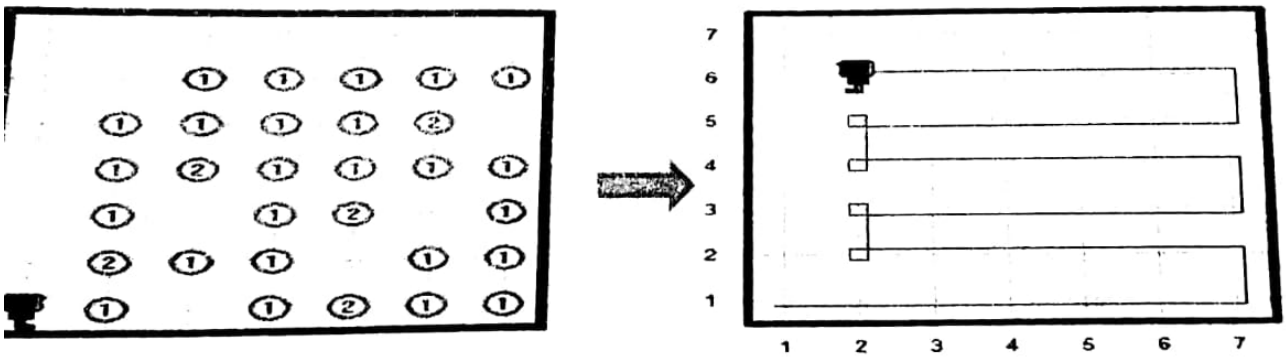
   Hint: area=1/2(height * width)

2. **Write the output** of the following code **on the world figure** given next to this code.

```
from cs1robots import *
create_world()
hubo=Robot(avenue=2,street=3,beepers=50)
hubo.set_trace("blue")
while not hubo.on_beeper():
    for i in range(4):
        hubo.drop_beeper()
        hubo.move()
        hubo.move()
    hubo.turn_left()
```

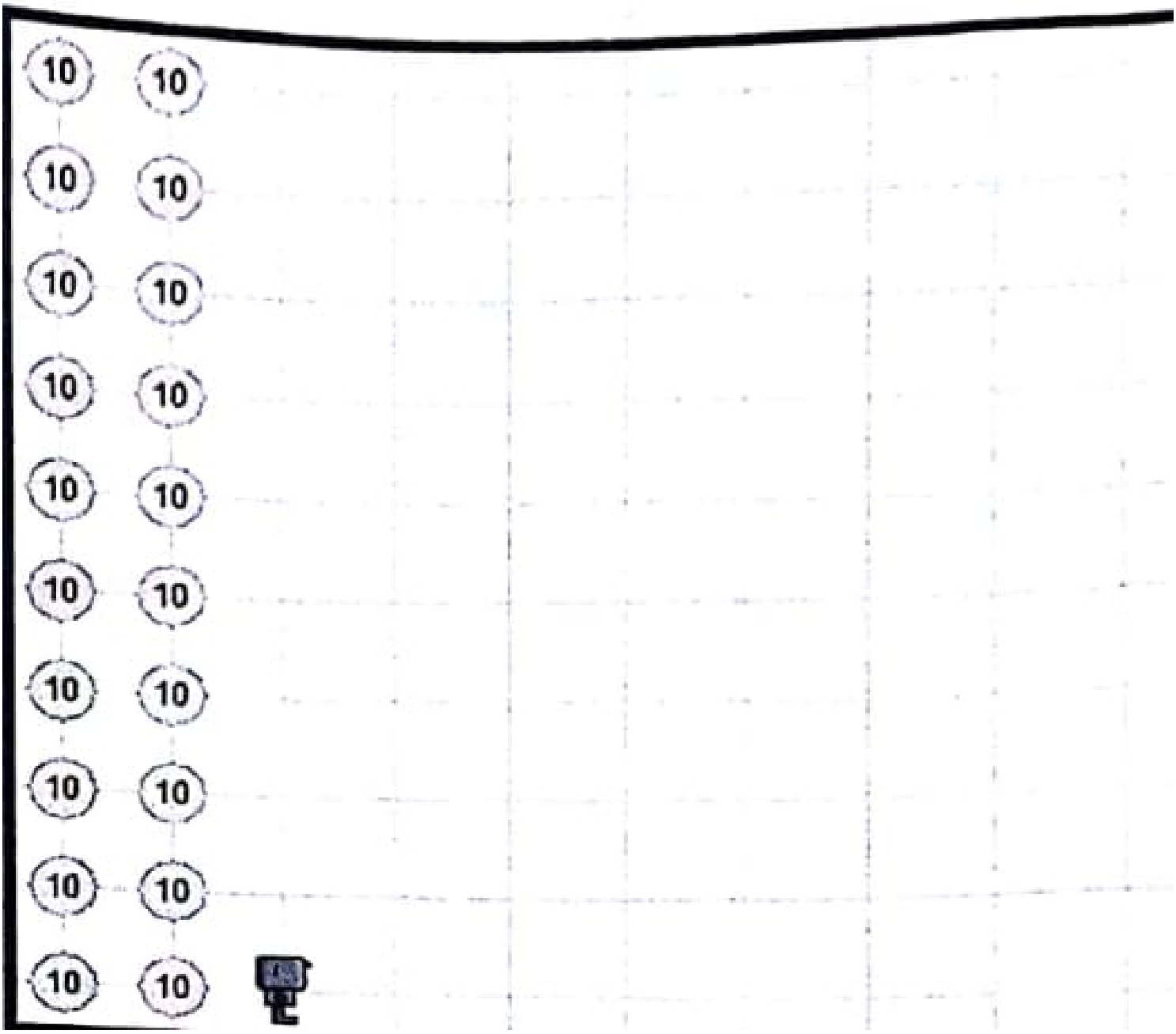


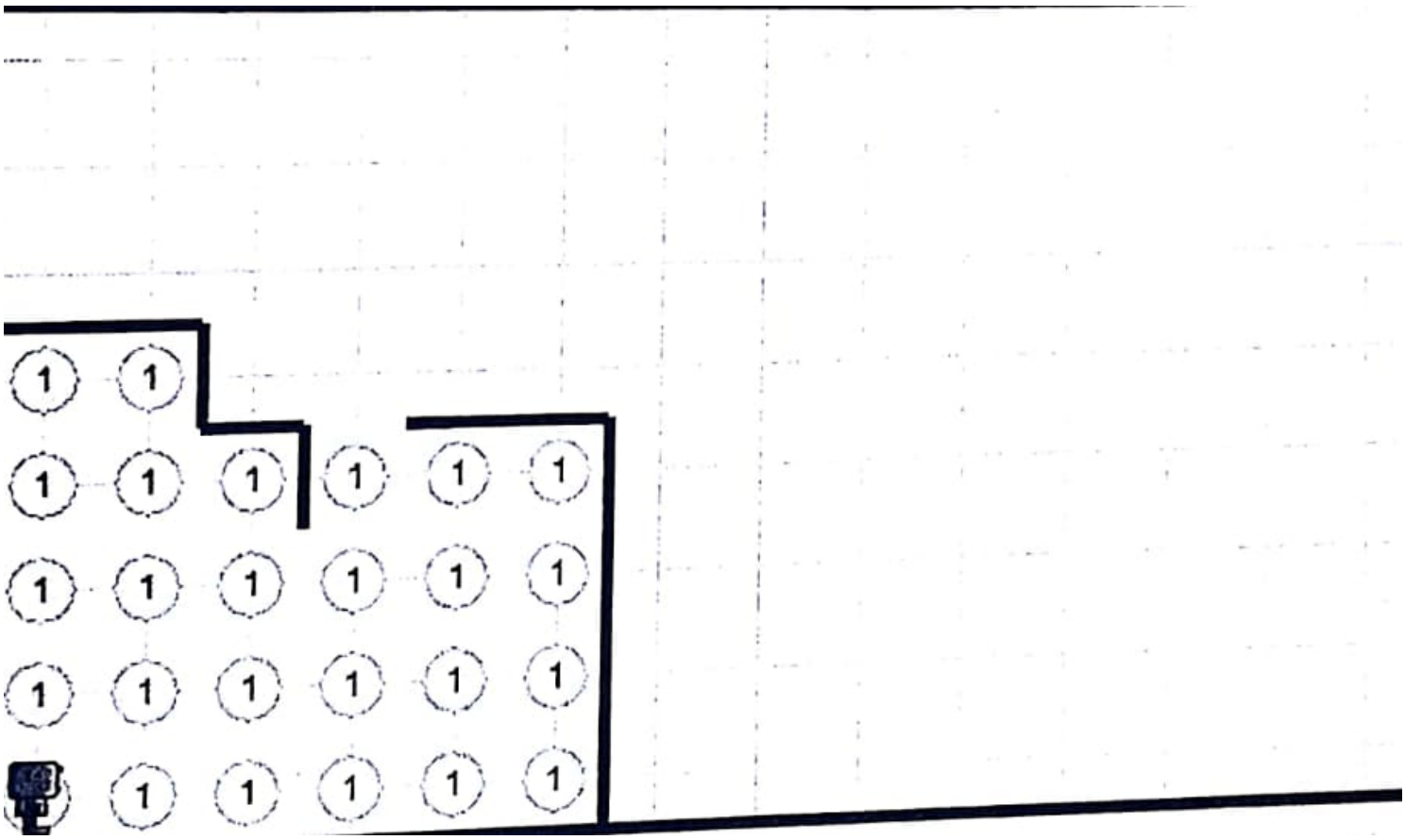
3. *The input data is as in the left figure.* **Write pseudo codes and python program** which make the robot move as the following right figure after the program is executed.



Show the position of the robot where

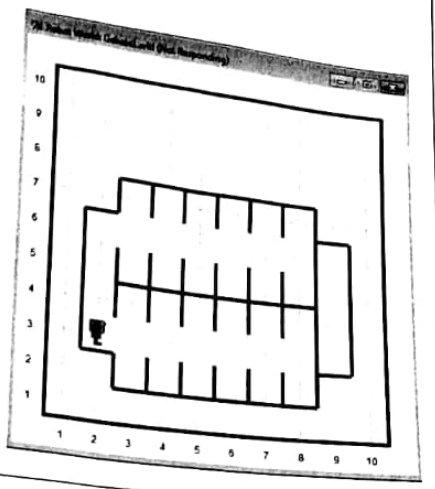
hubo=Robot(avenue=6,street=7 ,orientation="W"





```
from cs1robots import *
load_world("Gebeta1.wld")
h=Robot(beepers=3,avenue=2,street=3)
h.set_trace("blue")
h.set_pause(0.2)
def turn(n):
    for i in range(n):
        h.turn_left()
def play():
    if h.right_is_clear():
        turn(3)
        h.move()
    elif h.front_is_clear():
        h.move()
    elif h.left_is_clear():
        turn(1)
        h.move()
    else:
        turn(2)
        h.drop_beeper()

h.move()
while h.carries_beepers():
    play()
```



Questions:

① **(10) How many times does the play() function gets called** in the program's lifecycle?

Support your answer with justification:

_____

_____

② **(10)** When the program stops from running, **what will be the standing point coordinate[written as (avenue,street)] and the orientation** [face direction written as 'N','S','W', or 'E'] of the robot?

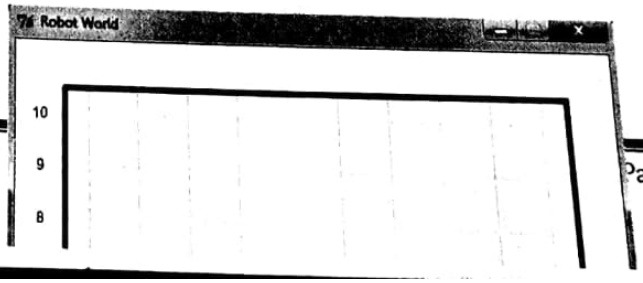
Standing point : _____Orientation: _____

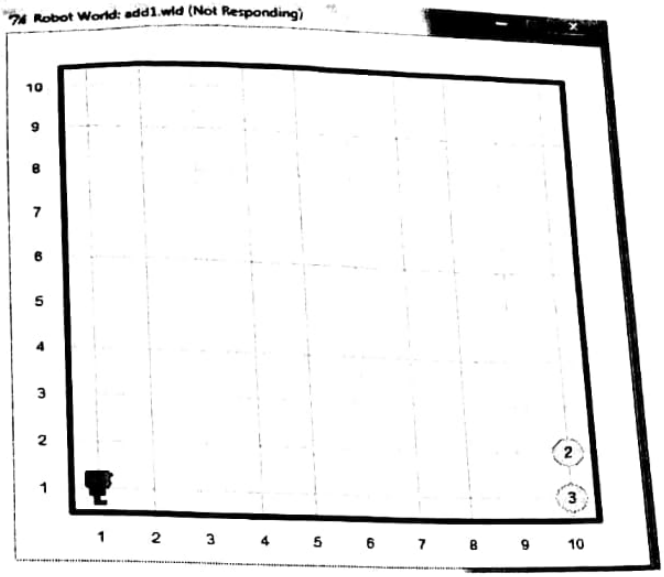
③ **(5) What will be the coordinate and Orientation of the robot** if the number of beepers that the robot carries was initially 5 ?

Standing point : _____Orientation: _____

3. (15) Write the output of the following code **on the world figure** given next to this code.

```
from cs1robots import *
```





```
create_world()
abc=Robot(avenue=3,street=3,beepers=50)
while not abc.on_beeper():
        for i in range(7):
                abc.drop_beeper()
                abc.move()
        abc.turn_left()
```

<figure> the world figure

4. (25) Convert the following code for - loop statement using while - statement. And what will be the output of the following program codes:

```
For  i  in range(7):
     print   "*"  *  i
```

5. (25) Write a pseudo code (algorithm) that solves the following problem

Problem: help hobo collect the beepers and return back to its starting point in the world shown bellow

For Pre-eng. — 465

1.H

465

1. **(25)** Consider the Pythagorean Theorem to find the distance between two points. A user enters the coordinates ($x1$, $y1$) and ($x2$, $y2$) as input point data. Compute the distance between two points and print out the distance, where, distance=$\sqrt{(x2-x1)+(y2-y1)}$

   a. (10) **Write a pseudo code** to solve this problem?

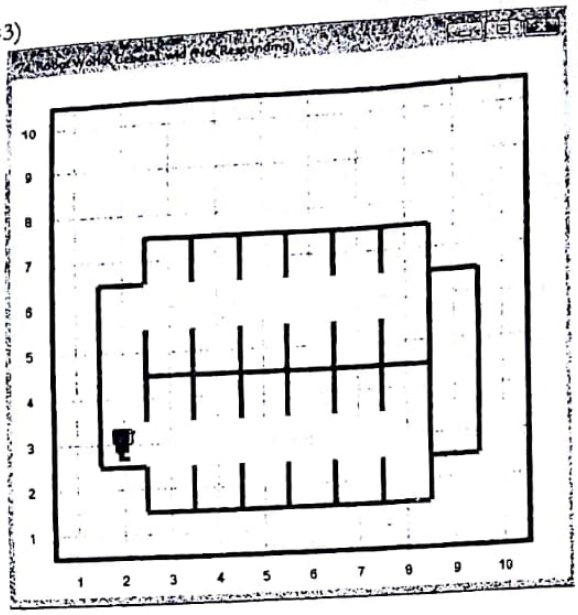
   b. (15) **Write python program** that generate the distance given two points (3,4) and (9,12) ? (Hint: use function)

2. **(25) Output Question:** Consider the following python code and the world "Gebeta1.wld" anc answer the questions that follow:

5. **(20 pts) Output Question:** Consider the following python code and "Gebeta1.wld" and answer the questions that follow:

```
from cs1robots import *
load_world("Gebeta1.wld")
h=Robot(beepers=3,avenue=2,street=3)
h.set_trace("blue")
h.set_pause(0.2)
def turn_right():
    for i in range(3):
        h.turn_left()
def turn_around():
    for i in range(2):
        h.turn_left()
def play():
    if h.right_is_clear():
        turn_right()
        h.move()
    elif h.front_is_clear():
        h.move()
    elif h.left_is_clear():
        h.turn_left()
        h.move()
    else:
        turn_around()
        h.drop_beeper()

h.move()
while h.carries_beepers():
    play()
```



Questions:

① **(10 pts) How many times does the play() function gets called** in the program's lifecycle?

Support your answer with justification:

_____

_____

② **(10 pts)** When the program stops from running, **what will be the standing point coordinate[written as (avenue,street)] and the orientation** [face direction written as 'N','S','W', or 'E'] of the robot?

Standing point : _____Orientation: _____

7.) Write python program to sort both in ascending and descending order for the following list
L1=[123, 'xyz', 'zara', 'abc', 'xyz'];

8.) Using the tuple t = [('a', 0), ('c', 2), ('b', 1)], Write a python program to generate dictionary dict()

9.) write a python program which converts Fahrenheit to Celsius
Note: Celsius = (Fahrenheit - 32) * 5.0/9.0 and use raw_input to accept the Fahrenheit from the keyboard

4.) Suppose that there is a list which contains the id number, mid and final marks of four students. The program uses a dictionary, where the key is the ID of the student and value is a list containing the mid and final result of student, like this { "R/1212/09": [35, 40] ,"R/1213/09": [25, 45] ,...} .

Id	Mid exam (40%)	Final exam (60%)	Total
R/1212/09	35	40	
R/1213/09	25	45	
R/1214/09	34	54	

A.) Calculate the total marks of each student and append them to your original lists inside the dictionary:

Similar to {"R/1212/09": [35, 40, 75], "R/1213/09": [25, 45, 65],...}

B.) Write a python program that print top 2 students (id and total) based on total

C.) Print the dictionary in the following format

Grade distribution			
Id	mid exam	final exam	total

5.) Write a python program count all words in word.txt longer than 6 letters print these words and the number of such words.

Note: assume you have word.txt file in your disk

6.) Write a python program that insert the word "me" at the second index and append "mess" in the following list

List1=["take", "out", "from"]

List1.insert(2, "me")
List1.append("mess")

998/97

Part one:

1.) Use the dictionary **eng2sp = {'one': 'uno', 'two': 'dos', 'three': 'tres'}** and identify true and false expressions and give reason for your answer?

A. len(eng2sp) is 3 True
B. 'one' in eng2sp True
C. 'uno' in eng2sp False
D. print eng2sp['four'] False

2.) What is the output of the following python program? write the output in the space provided

```
def sum( a , y, b= 4 , c= 5 ) :
    total=x * y * z
    print total
sum()
sum(11)
sum(11,22)
sum(11,22,30)
```

3.) What is the output of the following python program? write the output in the space provided

```
x= [20,3,30,8]
sum=0
for i in x:
    sum+=i
print sum
print x[2:4]
print x
x[1:3]=[7,66]
print x
print 30 in x
```

61

[20, 7, 66, 8]

61
[30, 8]
[20, 3, 30, 8]
[20, 7, 66, 8]
True
False

c) What will be the value of x and z after executing

```
x = [2,4,6]
y = [8,10,12]
x += y
x[-1] += 14
x += [20]
z = x[-1] + x[-2]/2
print "x=",x
print "z=",z
```

X= [-1, 2, 4, 6]
Z= [24, 6, 14]

d) What is the output of the following program?

```
a = [1, 2, 3, 4,1,2]
b = [1, 2, 3, 4,1,2]
c=('sagni','Abebe','chaltu','lemlem')
names=[]
names.append(c)
d=names
print (d == names)
names.append('Nathan')
print (a==b,a is b)
print (d is names, names==d)
```

d=('Abebe', chaltu, 'lem
'Nathan' sagn')
a=[1,2,3,4,1,2]
d=('sagni', abebe, Ch
lemlem

e) What is the output of the following function?

```
def Run():
    a = [3,7]
    for i in range(3):
        a.append(a[-2]+i)
        a[i] -= a[i+1]
    print a[1:-1]
Run()
```

[4, 8]

Adama Scie... ...ology University

School of Electrical Engineering and Computing

Computer Science and Engineering Program

CSE1011 Quiz 2

Semester I, 2016/17

Name: Taha Ahmed

ID: Atur 448709

Maximum mark 15%

Group: 36

1. **Write the output of the following python programs on the space provided.**

a) What will be the final value of b after the loop?

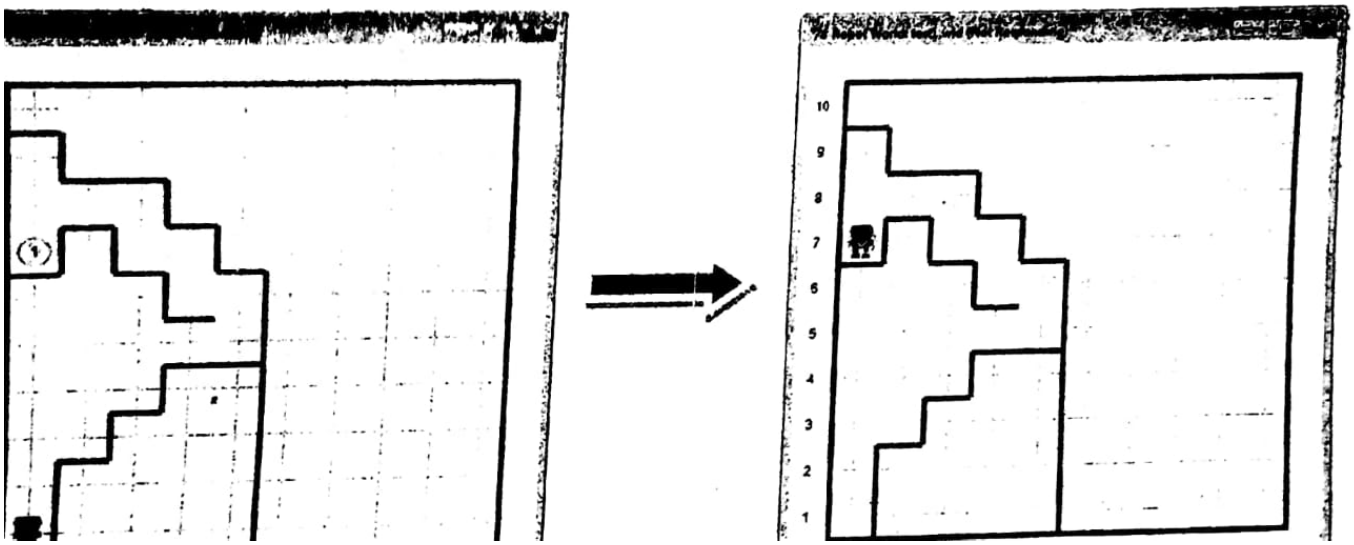
```
b = 5
for a in range(1, 10, 3):
    if a % 5 == 0:
        b *= 3
    else:
        b += a
print b
```

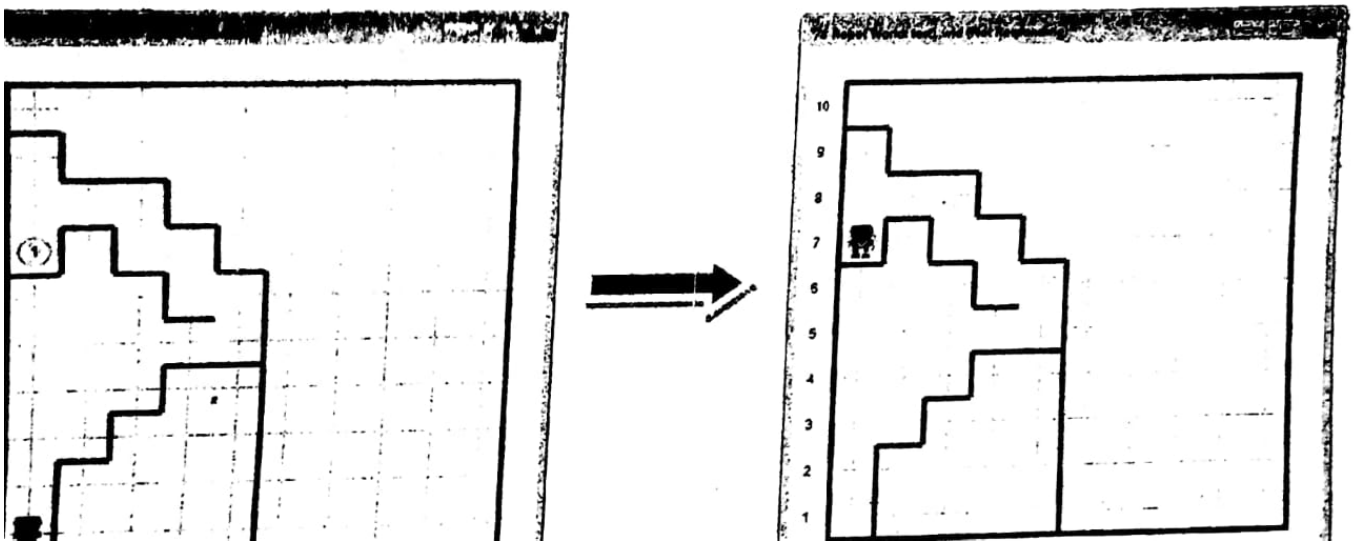
(15,10,3)

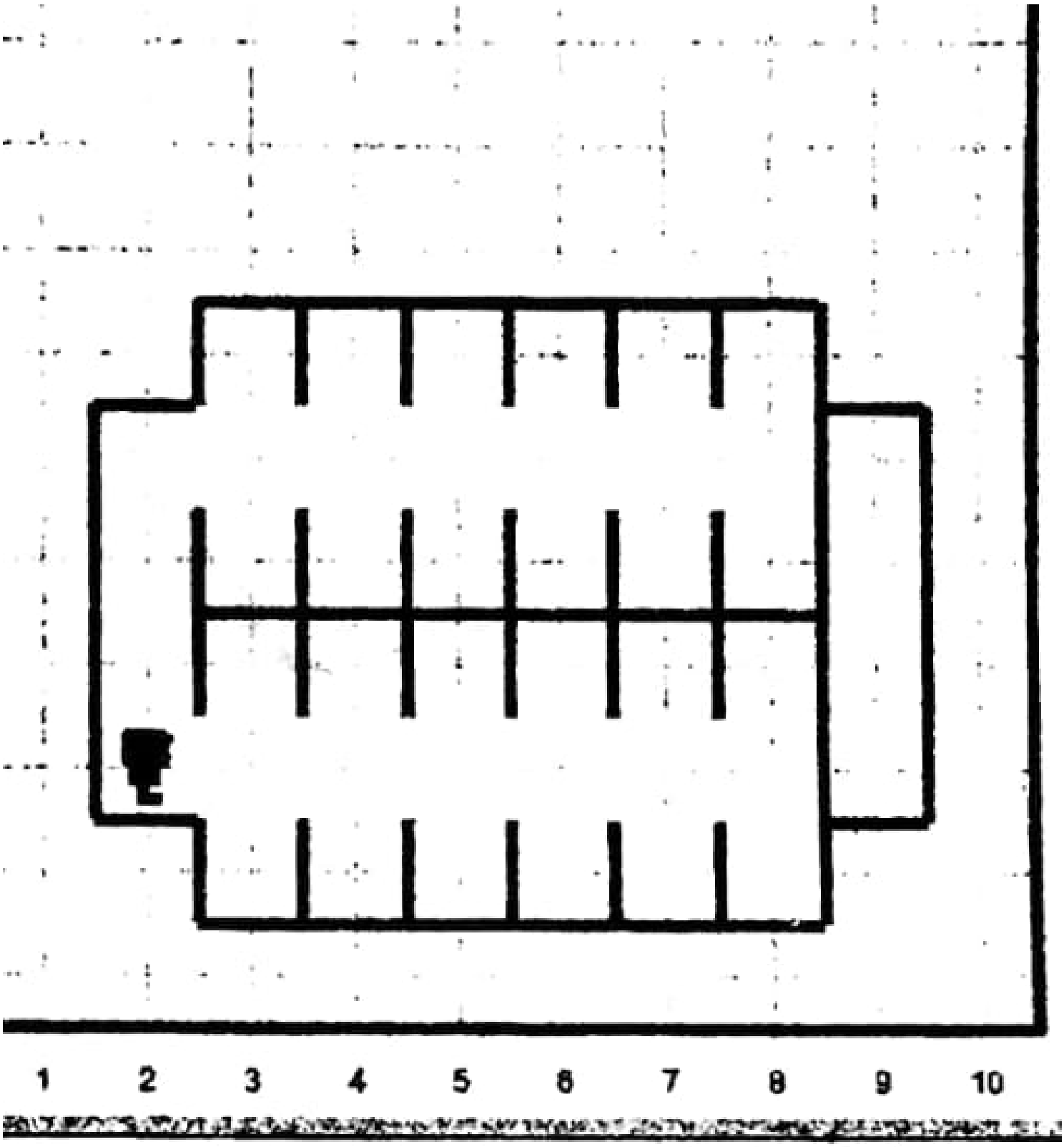
b) Given the following two functions, what will **fun1 (2,3)** return?

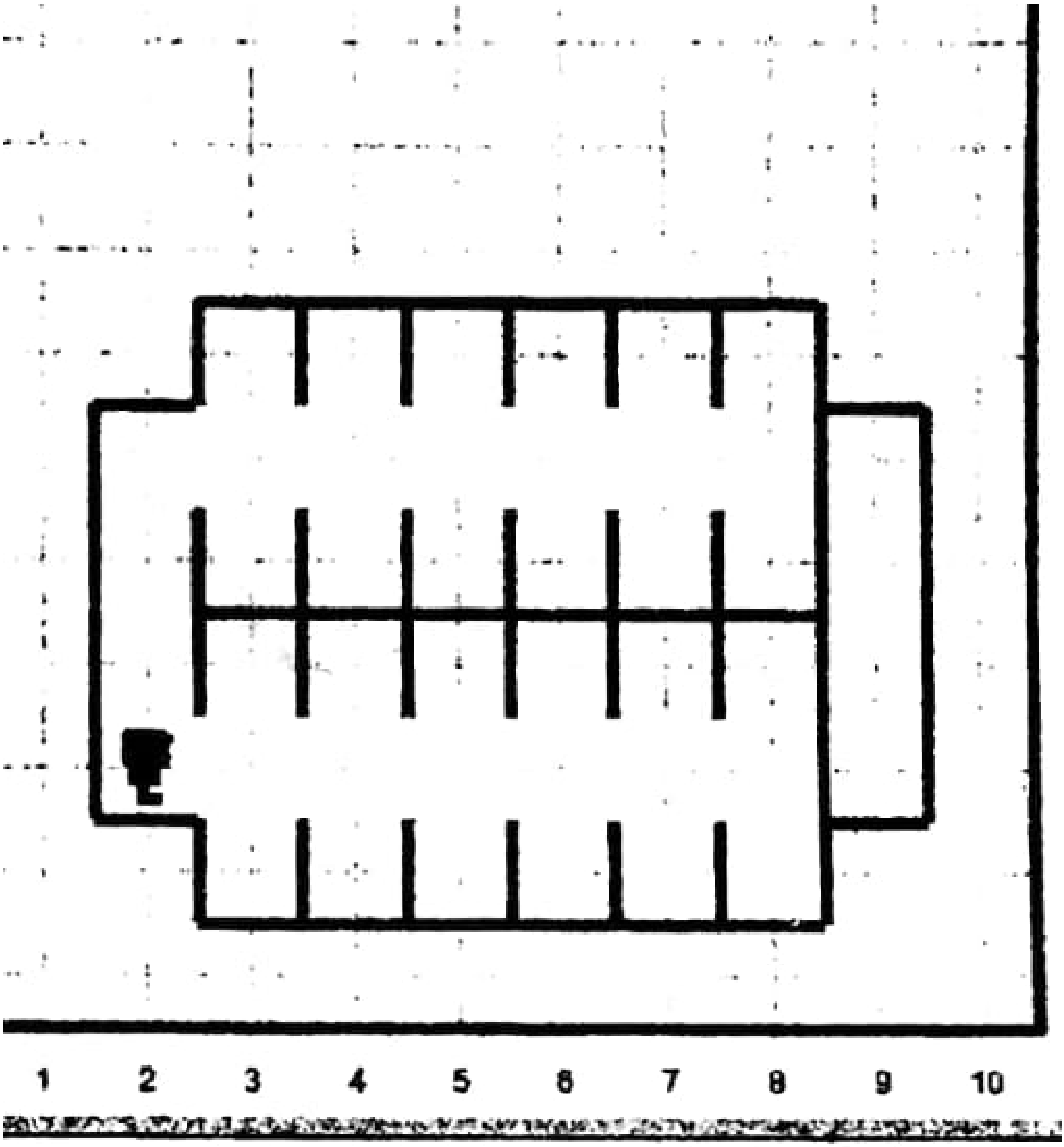
```
def fun1(a, b):
    list1 = [a, b]
    for x in range(4):
        list1.append( fun2(list1) )
    return list1
def fun2(y):
    return y[-1] + y[-2]
res=fun1(2,3)
print res
```

(3,2)

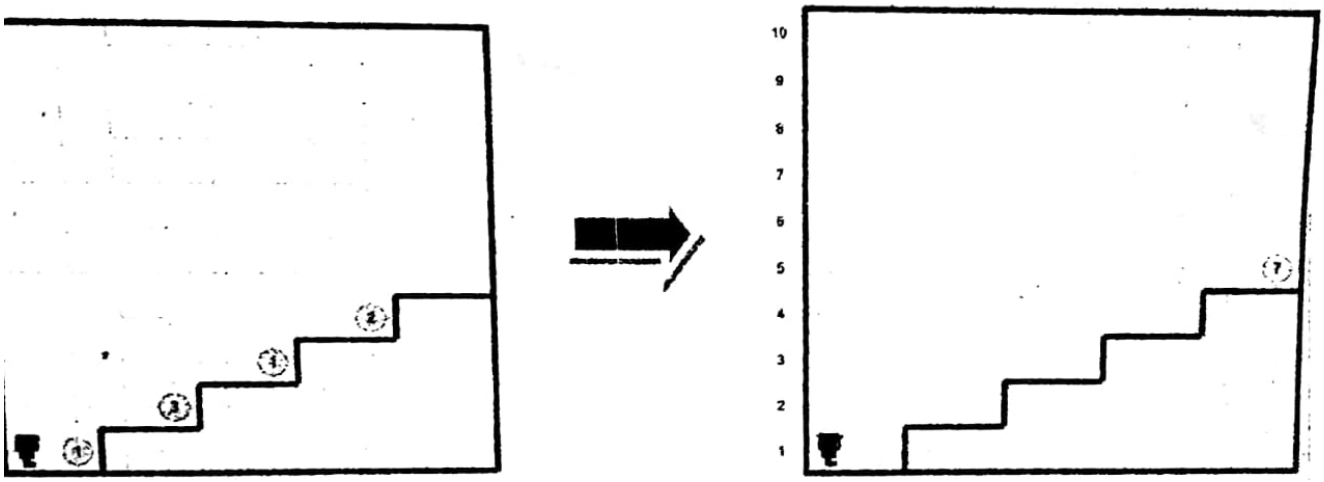




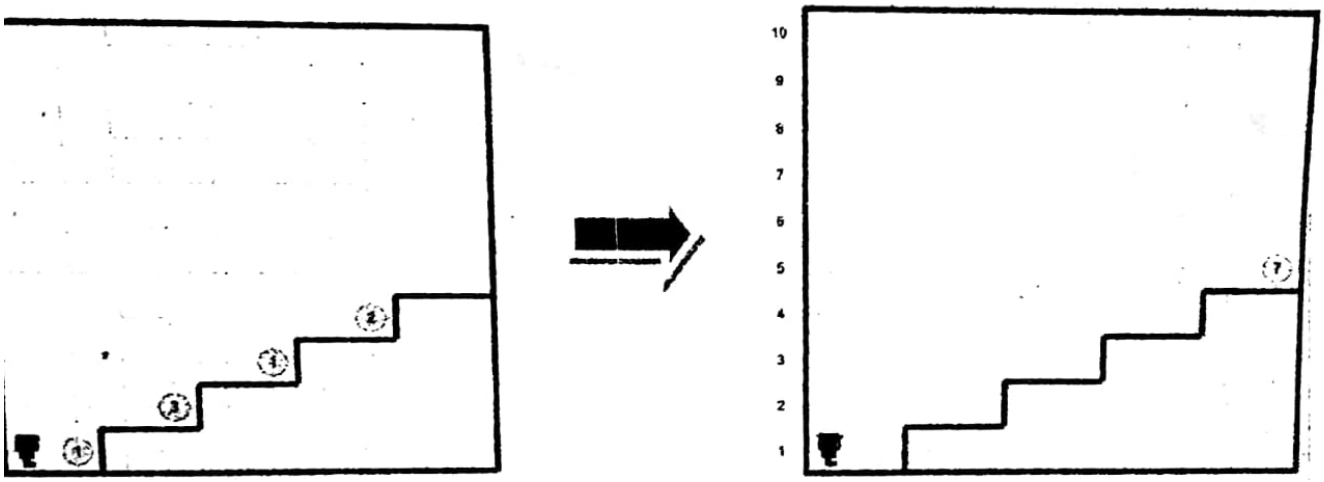




) Given the world in the left side,



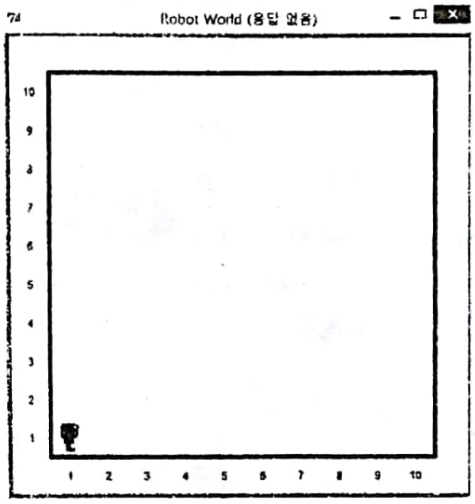
) Given the world in the left side,



Introduction to Computing Mid-exam 2008E.C.

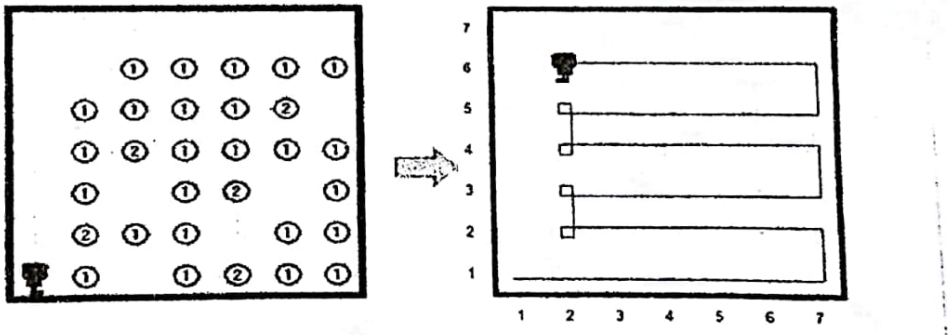
(20 pts) Write the output of the following code **on the world figure** given next to this code.

```
from cs1robots import *
create_world()
abc=Robot(beepers=50)
while not abc.on_beeper():
        for i in range(5):
            abc.drop_beeper()
            abc.move()
        abc.turn_left()
```



<figure> the world figure

2. **(20 pts)** The input data is as the figure in the left figure. **Write pseudo codes or Python program** which make the robot move as the following right figure after the program is executed.

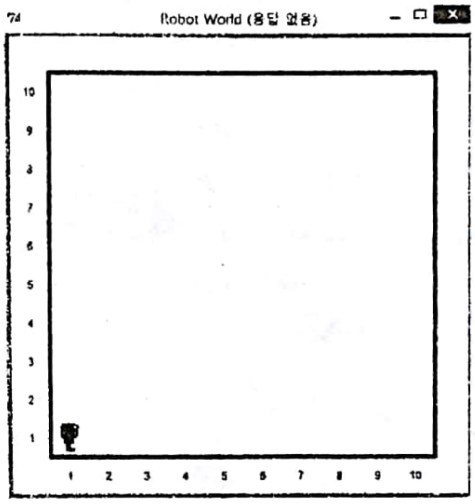


<starting of a robot> < end of a robot movements>

Introduction to Computing Mid-exam 2008E.C.

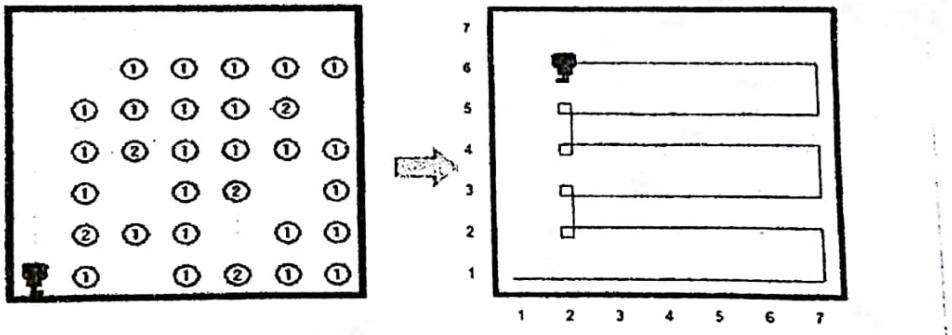
(20 pts) Write the output of the following code **on the world figure** given next to this code.

```
from cs1robots import *
create_world()
abc=Robot(beepers=50)
while not abc.on_beeper():
        for i in range(5):
            abc.drop_beeper()
            abc.move()
        abc.turn_left()
```



<figure> the world figure

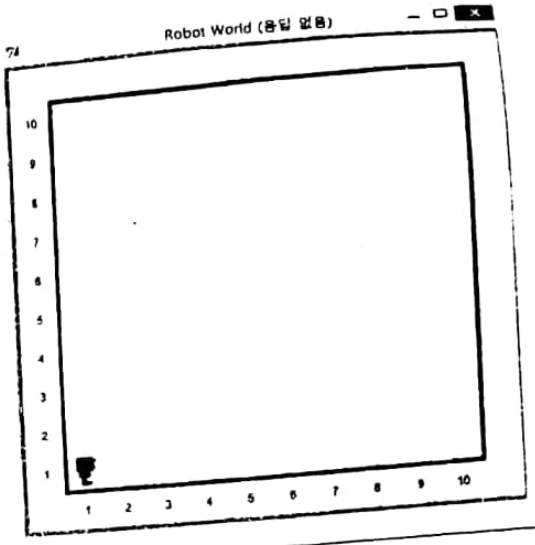
2. **(20 pts)** The input data is as the figure in the left figure. **Write pseudo codes or Python program** which make the robot move as the following right figure after the program is executed.



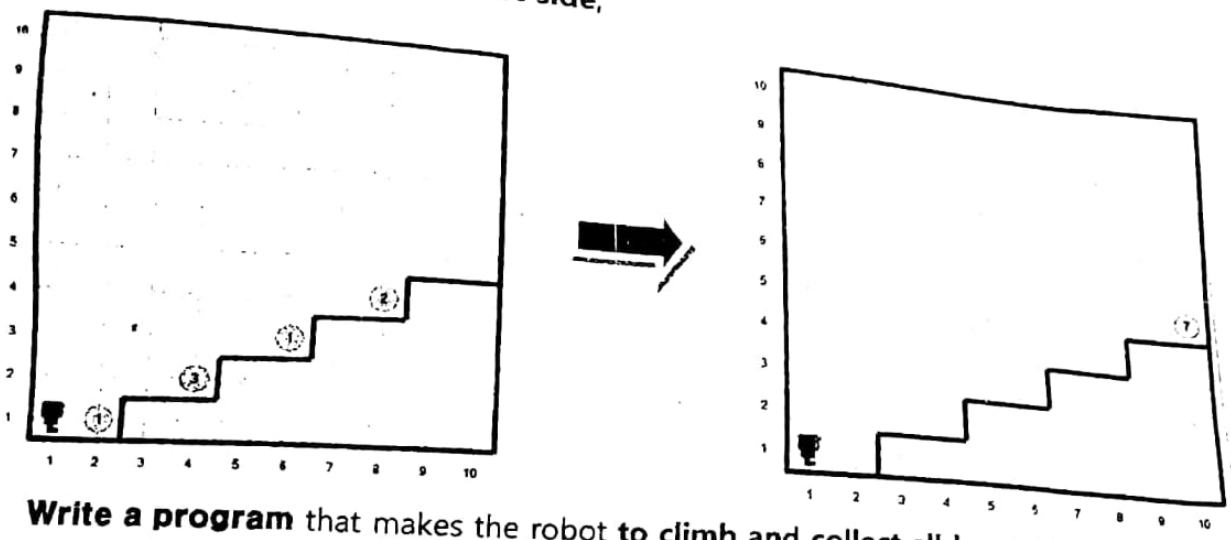
<starting of a robot> < end of a robot movements>

3 **(20 pts) Optimize** the following python **program code**, by modifying it using possible programming elements. Write the answer in the box. (Hint: the final code will have the same purpose as the original and smaller number of rows)

```
from cs1robots import *
create_world()
hubo=Robot()
hubo.set_trace("blue")
hubo.set_pause(0.2)
hubo.move()
hubo.move()
hubo.turn_left()
hubo.move()
hubo.move()
hubo.turn_left()
hubo.move()
hubo.move()
hubo.turn_left()
hubo.turn_left()
hubo.turn_left()
hubo.move()
hubo.turn_left()
hubo.turn_left()
hubo.turn_left()
hubo.move()
hubo.move()
hubo.turn_left()
hubo.move()
hubo.move()
hubo.turn_left()
hubo.move()
hubo.move()
```



(20 pts) **Given the world in the left side,**



Write a program that makes the robot **to climb and collect all beepers** and keep them at position (10,5) finally the robot returns back to its initial position(1,1) as shown in the right.

Introduction to Computing

(20 pts) **Write the output** of the following code **on th**

```
from cs1robots import *
create_world()
abc=Robot(beepers=50)
while not abc.on_beeper():
        for i in range(5):
            abc.drop_beeper()
            abc.move()
        abc.turn_left()
```

2. **(20 pts)** The input data is as the figure in the left fi
program which make the robot move as the following right

Name_____ ID_____ Group_____

3. write a program that check if a number is odd or even using function

Name [illegible] ID [illegible] Group 23

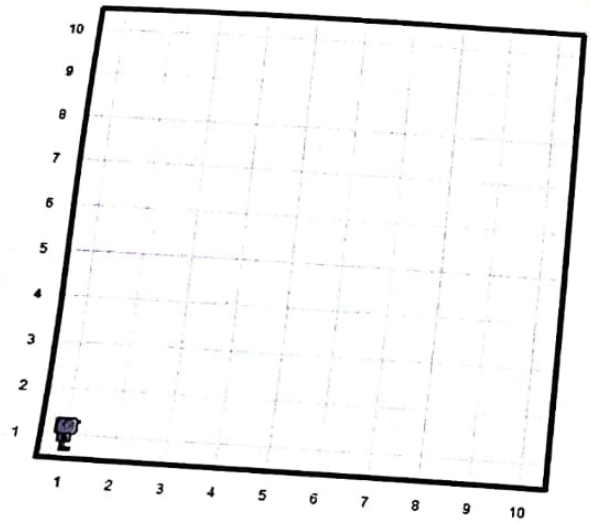
Adama Science and Technology University
School of Electrical Engineering and Computing
Computer Science and Engineering Program-CSE
Computational Thinking Quiz One

Instruction :

1. ***Answer the following questions clearly and neatly.***
2. ***Use function, conditional, and or loop when necessary***
3. ***Use meaningful variable and function naming***

1. Write a program to create a world of default size which is 10x10 as shown below

World before the program executes



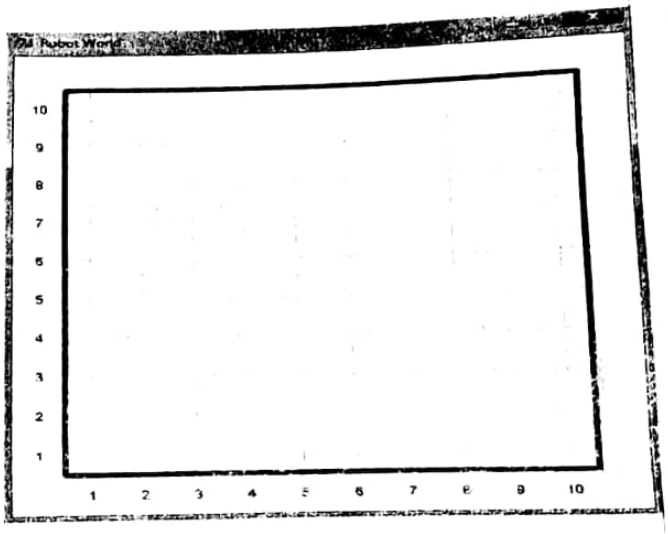
World after the program executes

1. **Write a Def function** by the name **triengle_area** which accepts **height** and **width** of **triangle** as arguments from the caller and **return** area of **triangle** to the caller and display it. **Read height and width of the triangle from the keyboard.**

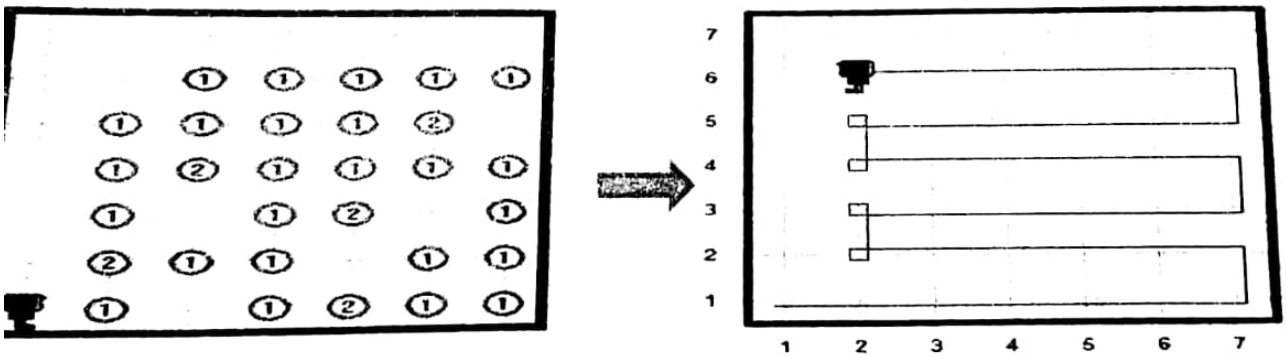
   Hint: area=1/2(height * width)

2. **Write the output** of the following code **on the world figure** given next to this code.

```
from cs1robots import *
create_world()
hubo=Robot(avenue=2,street=3,beepers=50)
hubo.set_trace("blue")
while not hubo.on_beeper():
    for i in range(4):
        hubo.drop_beeper()
        hubo.move()
        hubo.move()
    hubo.turn_left()
```

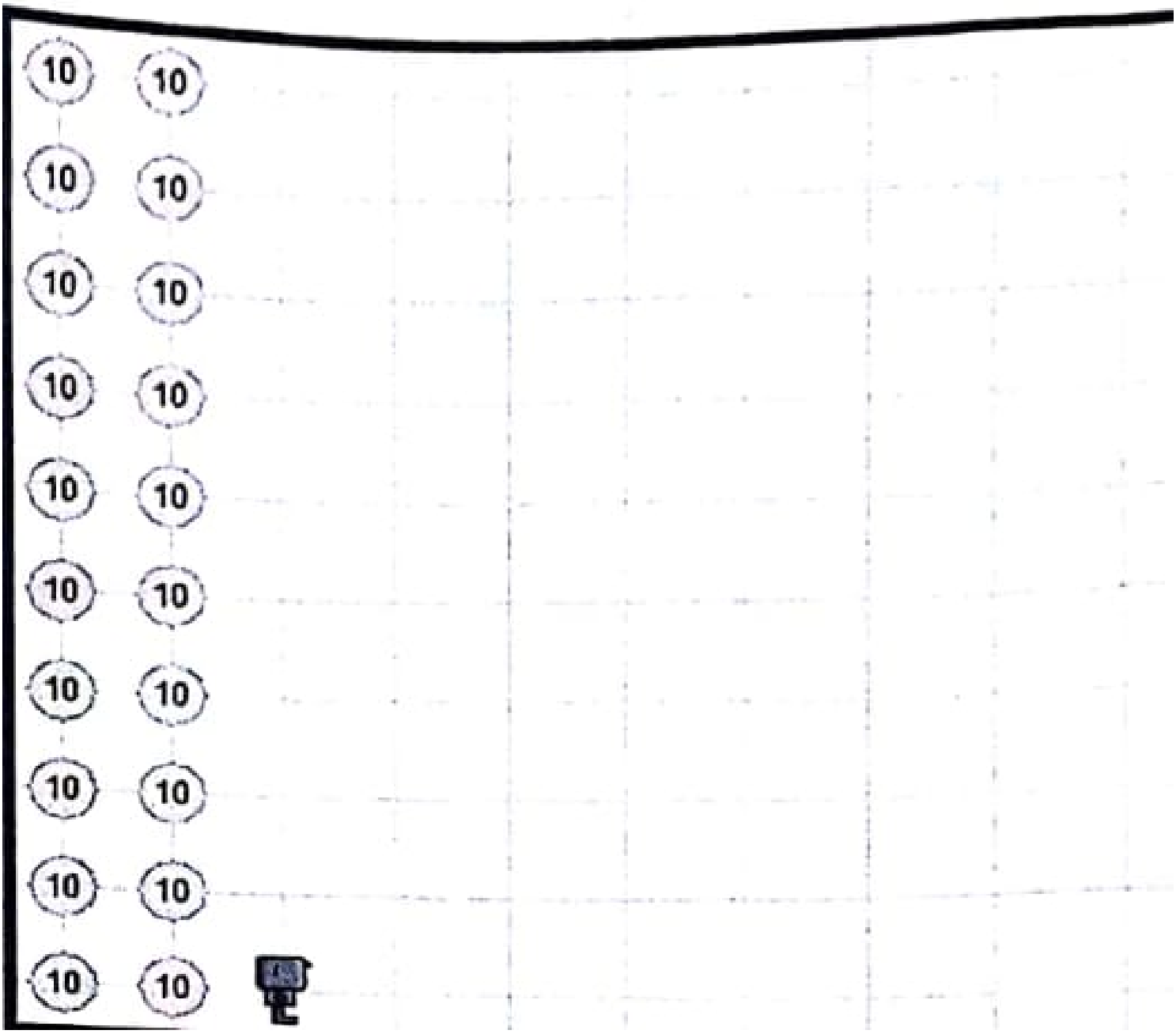


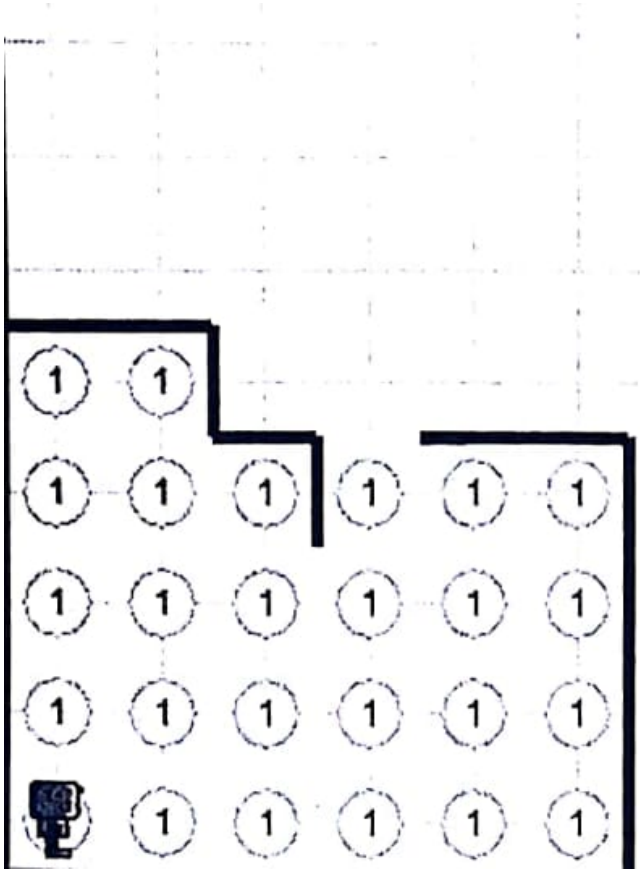
3. *The input data is as in the left figure.* **Write pseudo codes and python program** which make the robot move as the following right figure after the program is executed.



Show the position of the robot where

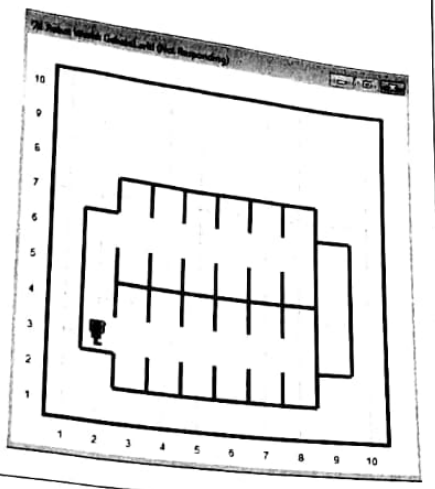
hubo=Robot(avenue=6,street=7 ,orientation="W"





```
from cs1robots import *
load_world("Gebeta1.wld")
h=Robot(beepers=3,avenue=2,street=3)
h.set_trace("blue")
h.set_pause(0.2)
def turn(n):
    for i in range(n):
        h.turn_left()
def play():
    if h.right_is_clear():
        turn(3)
        h.move()
    elif h.front_is_clear():
        h.move()
    elif h.left_is_clear():
        turn(1)
        h.move()
    else:
        turn(2)
        h.drop_beeper()

h.move()
while h.carries_beepers():
    play()
```



Questions:

① **(10) How many times does the play() function gets called** in the program's lifecycle?

Support your answer with justification:

_____

_____

② **(10)** When the program stops from running, **what will be the standing point coordinate[written as (avenue,street)] and the orientation** [face direction written as 'N','S','W', or 'E'] of the robot?

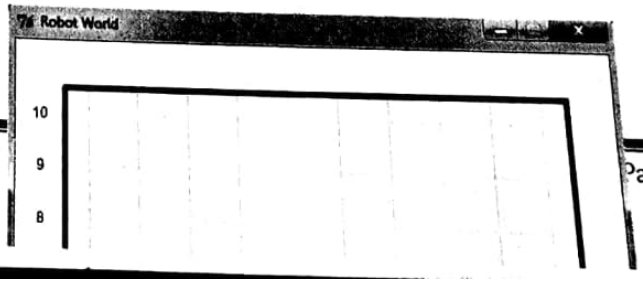
Standing point : _____Orientation: _____

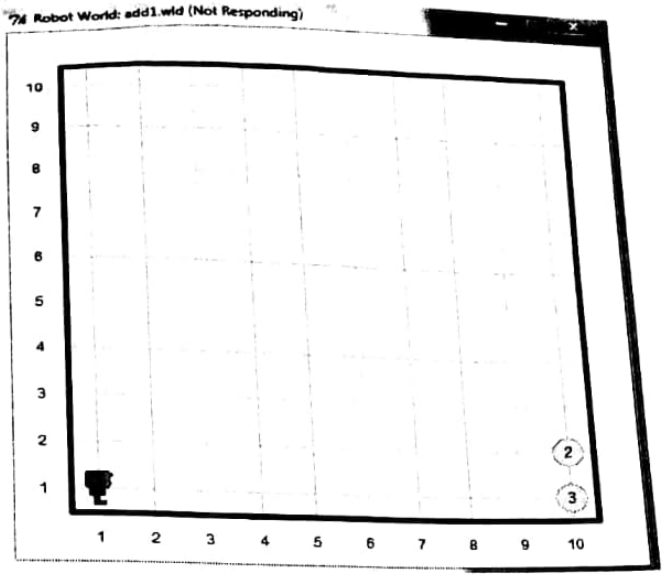
③ **(5) What will be the coordinate and Orientation of the robot** if the number of beepers that the robot carries was initially 5 ?

Standing point : _____Orientation: _____

3. (15) Write the output of the following code **on the world figure** given next to this code.

```
from cs1robots import *
```





```
create_world()
abc=Robot(avenue=3,street=3,beepers=50)
while not abc.on_beeper():
        for i in range(7):
                abc.drop_beeper()
                abc.move()
        abc.turn_left()
```

<figure> the world figure

4. (25) Convert the following code for - loop statement using while - statement. And what will be the output of the following program codes:

```
For  i  in range(7):
     print   "*"  *  i
```

5. (25) Write a pseudo code (algorithm) that solves the following problem

Problem: help hobo collect the beepers and return back to its starting point in the world shown bellow

For Pre-eng. — 465

1.H

465

1. **(25)** Consider the Pythagorean Theorem to find the distance between two points. A user enters the coordinates ($x1$, $y1$) and ($x2$, $y2$) as input point data. Compute the distance between two points and print out the distance, where, distance=$\sqrt{(x2-x1)+(y2-y1)}$

   a. (10) **Write a pseudo code** to solve this problem?

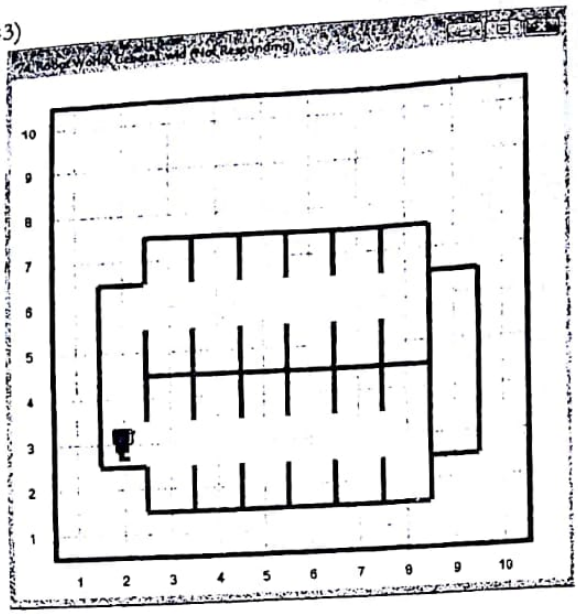
   b. (15) **Write python program** that generate the distance given two points (3,4) and (9,12) ? (Hint: use function)

2. **(25) Output Question:** Consider the following python code and the world "Gebeta1.wld" anc answer the questions that follow:

5. **(20 pts) Output Question:** Consider the following python code and "Gebeta1.wld" and answer the questions that follow:

```
from cs1robots import *
load_world("Gebeta1.wld")
h=Robot(beepers=3,avenue=2,street=3)
h.set_trace("blue")
h.set_pause(0.2)
def turn_right():
    for i in range(3):
        h.turn_left()
def turn_around():
    for i in range(2):
        h.turn_left()
def play():
    if h.right_is_clear():
        turn_right()
        h.move()
    elif h.front_is_clear():
        h.move()
    elif h.left_is_clear():
        h.turn_left()
        h.move()
    else:
        turn_around()
        h.drop_beeper()

h.move()
while h.carries_beepers():
    play()
```



Questions:

① **(10 pts) How many times does the play() function gets called** in the program's lifecycle?

Support your answer with justification:

_____

_____

② **(10 pts)** When the program stops from running, **what will be the standing point coordinate[written as (avenue,street)] and the orientation** [face direction written as 'N','S','W', or 'E'] of the robot?

Standing point : _____Orientation: _____