Adama Science and Technology University

School of Electrical engineering and Computing

Department of Computer Science and Engineering

Software Engineering (CSEng1101) group Assignment

Submission Date: March-30-2024

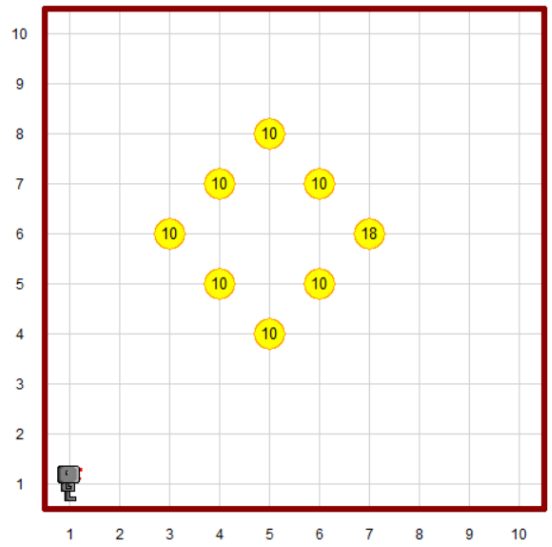
Name:_____ID:_____

Instructions:

⇒ Write only your Name and ID neatly, visible!
⇒ All questions related to coding needs to be submitted in code!
⇒ One member will present and random question will be asked to a random member!
⇒ Groups with impressive and smart work [codes with optimized /short with function, comments, readability and meaning full variables and function names] will have bonus! After they demonstrate!
⇒ Groups who finish and submit before deadline with clean work can be submit and have bonus!

Answer the following question

1. White an optimized code to collect all beepers and drop them at the initial location of the Robot.



2. Given the following pseudo code and write a program to implement the pseudo code
   a. **Step 1**: Input a number from the keyboard
   b. **Step 2**: Double the number and print the result
   c. **Step 3**: Repeat **Step 1** and **Step 2** until the user enters a number less than 0.
3. Given the following code segment and write the output

```
d = {0: 'CSE is the Best', 1: 'SE is the Greatest', 2: 'ECE is awesome'}
x=[]
y=[]
for i in d:
    x.append(i)
    y.append(d[i])
print x
print y
```

```
i = 0
while i < 5:
   print(i)
   i += 1
   if i == 3:
      break
   else:
      print(0)
```

```
def f(a):
  print "a = ", a
def g():
  a = 7
  f(a+1)
  print "a = ", a
a = "Letter a"
print "a = ", a
f(3.14)
print "a = ", a
g()
print 'a = ', a
```

4. Write a program to display all the odd integers between 1 and the biggest odd number smaller than an integer entered by the user.
5. Differentiate between mutable and immutable objects in Python language with example.
6. What is the output of the program?

```
def ChangeList():
    L=[]
    L1=[]
    L2=[]
    for i in range(1,10):
        L.append(i)
    for i in range(10,1,–2):
```

```
            L1.append(i)
    for i in range(len(L1)):
            L2.append(L1[i]+L[i])
            L2.append(len(L)-len(L1))
    print(L2)
ChangeList()
```

7. See the following table and answer the question that follows

StudName	Course			
	Computing	**Maths**	**Physics**	**CGPA**
John	A	B	B	
Chaltu	A	A	B	
Mohammed	B	A	C	
Kenny	C	B	B	
Tayitu	A	B	B	

Given

a. All courses are 3 credit hour course
b. A=4, B=3, C=2, D=1, F=0
c. StudName=["John","Tayitu","Chaltu","Mohammed","Kenny"]
d. Course={"Computing":["A","B","C","A",,"A"],"Math":["B","A","A","B","B"], "Physics":["B","B","C","B","B"]}
   i. Write a program to create a dictionary that contain student name as a key and course, grade points as tuple values
   ii. Write a program to calculate grade point average (CGPA) of students given above and create a dictionary that contains student name as key, courses, grades, cgpa as values for each student. e.g. CGPA for John [Grade=A,B,B, credit=3,3,3 CGPA=(credit1*letter1_grade1+credit2*letter_grade2+ credit3*letter_grade3)/ total_credit], cgpa=(4*3+3*3+3*3)/(3+3+3)
   iii. Write a program to create a file called grade_report and write the output in question (ii) to the file grade_report.

8. Using cs1graphics module, create a Canvas that imitate a Universe, create three objects such as earth green, sun white and moon light white. On the earth object create a house, a flowing river, and a moving car with a high way road. Design the sun object to illuminate light to earth and moon objects. Design a rocket object between the earth and the moon objects [No group should bring similar work].
9. Write a program to get the following
   a. Find the factorial of a number n taken from keyboard using loop only.
   b. Find the factorial of a number n taken from keyboard using function only.
   c. Find the factorial of a number n taken from keyboard using recursive function only.
   d. Find the factorial of numbers between n1 and n2 both taken from keyboard using function and store the values in a list variable.
   e. Sort the output in question (c) in descending order.
10. Write a program to implement using appropriate python module
   a. area of a circle,
   b. $\frac{-b+/-\sqrt{4ac}}{2a}$
   c. Display current month days in a calendar
   d. Display a trigonometric table

Trigonometry									
Angles (In Degrees)	0°	30°	45°	60°	90°	180°	270°	360°	Given
~~Angles (In Radians)~~	~~0°~~	~~π/6~~	~~π/4~~	~~π/3~~	~~π/2~~	~~π~~	~~3π/2~~	~~2π~~	
sin	0	1/2	1/√2	√3/2	1	0	-1	0	Calculate
cos	1	√3/2	1/√2	1/2	0	-1	0	1	
tan	0	1/√3	1	√3	∞	0	∞	0	
cot	∞	√3	1	1/√3	0	∞	0	∞	
cosec	∞	2	√2	2/√3	1	∞	-1	∞	
sec	1	2/√3	√2	2	∞	-1	∞	1	

11. Write a program to find words that start with a letter “a” and save the output to the files “a.txt” [Use words.txt file]
12. Write a program to find palindrome words from words.txt file and save the result to palindrome.txt