Week 4: Assignment 4

Your last recorded submission was on 2023-02-14, 19:03 IST **Due date: 2023-02-22, 23:59 IST.**

1) Which of the following statements are true with regards to magic square? ***1 point***

- [x] The sum of each row should be m.
- [x] The sum of each column should be m.
- [x] The sum of each diagonal should be m.
- [ ] None of the above.

2) Which of the following statements hold true about N in the magic square? N denotes the number of rows and columns in the square. ***1 point***

- ○ N should be even.
- ◉ N should be odd.
- ○ N can be even or odd.
- ○ N can take any value.

3) Which of the following statements are true regarding the Magic Squares? (N = Number of rows or columns) ***1 point***

- [x] A Magic Square is always a square matrix.
- [ ] A Magic Square can or cannot be a square matrix.
- [ ] The Sum of each row and each column is N(N+1)/2
- [x] The Sum of each row and each column is $N(N^2+1)/2$.

4) What will be the output of the following code? ***1 point***

```
'''
This is a sentence
'''
```

- ○ This is a sentence.
- ○ Error
- ◉ No output
- ○ The program will not run.

5) Which of the following operator is used to raise the exponent to a number? ***1 point***

- ○ ^
- ○ *
- ◉ **
- ○ ***

6) Suppose there is a movie with 3 letters, how many combinations of names are possible? ***1 point***

- ○ 26
- ○ 676
- ◉ 17576
- ○ 456976

7) What should be the value of a, b, c, d respectively? ***1 point***

6	**a**	**8**
b	**5**	**c**
2	**d**	**4**

- ○ 1,3,9,7
- ○ 9,3,7,1
- ◉ 1,7,3,9
- ○ 7,3,9,1

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8) What will be the output of the following code? *1 point*

```
L1 = ['harry potter', 'matrix', 'spiderman', 'avengers', 'john wick']
L2= ['drishyam', 'spiderman', 'bahubali', 'dhoom', 'race', 'matrix']

L = []


for i in range(len(L1)):

    flag = 0

    for j in range(len(L2)):

        if(L1[i] == L2[j]):
            flag = 1
            break
        else:
            flag = 0

    if(flag == 0):
        L.append(L1[i])

print(L)
```

- (●) Print unique movies of list L1
- ( ) Print unique movies of list L2
- ( ) Print unique movies of list L1 and L2
- ( ) Shows an error

9) What will be the output of the following code? *1 point*

```
for i in range(5,20):
    if(i%5 == 0):
        print(i**2)
```

- ( ) Print all perfect squares with square roots between 5-20 and divisible by 5.
- ( ) Print all perfect squares with square roots between 5-20 and not divisible by 5.
- ( ) Print all perfect squares with square roots between 5-19 and not divisible by 5.
- (●) Print all perfect squares with square roots between 5-19 and divisible by 5.

10) A perfect number is a positive integer that is equal to the sum of its positive divisors, excluding the number itself. *1 point*
For example, 6 is a perfect number as the sum of its divisors 1,2,3 is equal to 6.
Which function will return True if the number is a perfect number?

(●)
```
def perfect_number(num):
    ans=0
    for i in range(1,num):
        if(num%i==0):
            ans = ans + i
    if(ans==num):
        return True
    else:
        return False
```

( )
```
def perfect_number(num):
    ans=0
    for i in range(1,num):
        if(num%i==0):
            ans+=i
    if(ans==num):
        return False
    else:
        return True
```

( )
```
def perfect_number(num):
    ans=0
    for i in range(3,num):
        if(num%i==0):
            ans = ans + i
    if(ans==num):
        return True
    else:
        return False
```

( )
```
def perfect_number(num):
    ans=0
    for i in range(1,num):
        if(num%i==0):
            ans = ans + i
    if(ans!=num):
        return True
    else:
        return False
```

You may submit any number of times before the due date. The final submission will be considered for grading.

Submit Answers

Programming Assignment 1:

\Write a program that takes a number `n` as input and prints the sum of the squares of the first `n` positive integers.

Example:

If n = 4, the program should output 30 (1^2 + 2^2 + 3^2 + 4^2 = 30)

Code:

```
n = int(input())
total = 0
for x in range(1,n+1):
    total = total + (x**2)
print(total, end ="")
```

Programming Assignment 2:

Write a program that takes a number `n` as input and prints the nth power of 2.

Example:
If n = 4, the program should output 16 (2^4 = 16)

Code:

```
n = int(input())
print(2**n, end ="")
```

Programming Assignment 3:

Write a program that takes a number `n` as input and prints a pyramid of numbers with `n` rows.

Example:

If n = 5, the program should output the following

```
    1
   232
  34543
 4567654
567898765
```

Code:

```
n = int(input())
count = 0
for y in range(1,n+1):
    for x in range(n,y,-1):
        print(" ", end="")

    for z in range(0,y):
        if(z+y<10):
            print(z+y,end="")
        else:
            print(count,end="")
            count+=1

    for a in range(z+y,y,-1):
        if(a<11):
            print(a-1,end="")
        else:
            print(count-2, end="")
            count-=1
    if(y<n):
        print()
    count = 0
```