## Structure Programming  Dr. Heba El Hadidi

## Exercise-5:

**What is the output?**

**1)**

```
num=5
while num<7:
        num+=1
print(num)
```

a) 5  b) 6  c) 7  d) 8

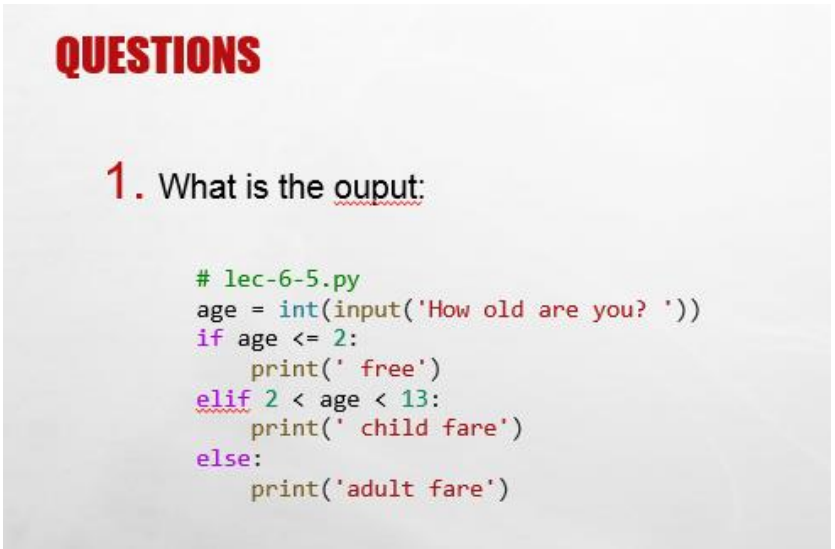
**2)**

```
for k in range(4):
        print('*'*6)
```

**3)**

```
Count=5
for step in range(1,4):
        Count+=step
print(Count)
```

a) 5  b) 8  c) 9  d) 12




1. Write a Python program to find numbers which are divisible by y, between 1000 and 3000

2. Write a Python program to count the number of even and odd numbers from a series of numbers.

3. Write a Python program that prints all the numbers from 0 to 60 except 10, 20 and 50.

4. Write a Python program which iterates the integers from 1 to 50. For multiples of three print “THREE" instead of the number and for the multiples of five print “FIVE".

5. Write a program that computes and prints the result of the following expression. (512-282)/ (47x48+5)

6. Ask the user to enter a number. Print out the square of the number, but use the step optional argument to print it out in a full sentence that ends in a period. For ex:

Enter a number: 5

The square of 5 is 25.

7. Ask the user to enter a number x, Use the step optional argument to print out x, 2x, 3x, 4x and 5x each separated by three dashes, for ex:

Enter a number: 7

7 - - - 14 - - - 21 - - - 28 - - - 35

8. Write a program that asks the user for a weight in kilograms and converts it to pounds. (1 kg= 2.2 pounds)

9. Write a program that asks the user to enter three numbers, Create variables called total and average that hold the sum and average of the three numbers and print out the total and average values.

10. Program to print your name 100 times.

11. Write a program to fill the screen horizontally and vertically with your name. (use end= ‘ ‘ option to print statement).

12. Write a program that prints out a list of the integers from 1 to 20 and their squares. As:

1 …… 1

2 …….4

3 …… 9

13. Write a program uses a loop to print the numbers 8, 11, 14, 17, …, 86, 92.

14. Write a program that uses a for loop to print the numbers 100, 97, 94, …., 3

15. Write a program that uses four loops to print the sequence of letters:

16. AAAAAAAAAABBBBBBBBCDCDCDCDCDEFFFFFFFG

17. Write a program that prints the sequence:

ZZZZZWWWWWQQQQQRRRRRYYYYYUUUUU

18. Write a program that prints

Hello Python….. Hello Python…..Hello Python….. Hello Python….. Hello Python….. Hello Python…..

Hello Python….. Hello Python…..Hello Python….. Hello Python…..

Hello Python….. Hello Python…..

Hello Python…..

19. Write a program that asks the user to enter a length in centimeters. If the user enters a negative length, the program tell the user “invalid entry”. Otherwise, the program should convert the length to inches and print the result. (2.54 cm in an inch).

20. Ask the user for a temperature. Then ask him what units, Celsius or Fahrenheit, the temperature is in. Your program should convert the

temperature to the other unit. The conversions are F=9/5*C+32 and C=5/9*(F-32).

21. Ask the user to enter a temperature in Celsius. The program should print a message based on the temperature. If the temperature is less than -273.15, print that the temperature is invalid because it is below absolute zero.

- If it is exactly -273.15, print the temperature is absolute 0.
  - If the temperature is between -273.115 and 0, print that the temperature is below freezing.
  - If it is 0, print that the temperature is at the freezing point.
  - If it is between 0 and 100, print that the temperature is in the normal range.
  - If it is 100, print that the temperature is at the boiling point.
  - If it is above 100, print that the temperature is above the boiling point.

1. Write a program to ask the user how many credits he has taken. If he has taken 30 or less print ‘the student is a freshman’, if between 31 and 55 print ‘he is sophomore’, the range for junior is 56 and 85, for senior 86 and over.

22. Generate a random number between 1 and 10. Ask the user to guess the number and based a message ‘right’ or ‘wrong’ based on the number.

23. A store charges 12$ per item if you buy less than 10 items. If you buy between 10 and 99 items, the cost is 10$ per item. If you buy 100 or more items, the cost is 7$ per item. Write a program to ask the user how many item he buy, then print the total cost.

24. Write a program to count how many of the squares of the numbers from 1 to 100 end in a 1.

25. Write a code that counts how many of the squares of the numbers from 1 to 100 end in a 4 and how many end in a 9.

26. Write a program that asks the user to enter a value n, and then computes (1+ ½ + 1/3+ …+ 1/n)- ln(n). (ln is the same as log in math module).

27. Write a program to compute the sum 1-2+3-4+ ….+99-200

28. Write a program that asks the user to enter a number and prints the sum of the divisors of that number.

29. A number is called ***perfect number*** if it is equal to the sum of all of its divisors. E.g. 6=1+2+3 (6 divisors are 1, 2, 3, 6). (28 also is perfect as its divisors are 1, 2, 4, 7, 14, 28 and 28=1+2+4+7+14). 15 is not perfect as 15<>1+3+5. Write a Python code that finds all perfect numbers less than 1000.

30. An integer is called ***squarefree*** if it is not divisible by any perfect squares other than 1. E.g. 42 is squarefree because its divisors are 1, 2, 3, 6, 7, 21 and 42 and none of them except 1 is a perfect square. 45 is not squarefree as its divisors are 1, 5, 9, 45 and 9 is perfect square. Write a program to ask the user for an integer and tells him if it is squarefree or not.

31. Write a program that counts how many integers from 1 to 1000 are not perfect squares nor perfect cubes

32. Write Python program to ask the user for a number n and prints the sum of the numbers 1 to n such that only multiplies of three or five are considered in the sum, e.g. 3,5,6,9,10,12,15 for n=17

33. Write a program that prints the next 10 **leap** years

## QUESTIONS lec-6-1.py

- Write python program to check if a number is even number using user defined function:

```
def Is_Divisible(number, divisor):
    return Modulo(number, divisor) == 0
def Is_Even(number):
    return Is_Divisible(number, 2)
def Modulo(num, d):
    return (num%d)

print(Is_Even(59))
```

## QUESTIONS lec-6-2.py

Given a string, write a python function to check if it is palindrome or not. A string is said to be palindrome if the reverse of the string is the same as string. For example, “radar” is a palindrome, but “radix” is not a palindrome.

```
# function which return reverse of a string
def isPalindrome(s):
    return s == s[::-1]
# Main code
s = "malayalam"
ans = isPalindrome(s)
if ans:
    print("Yes")
else:
    print("No")
```

## QUESTIONS- lec-6-3.py

Write a program that check if a given number is **prime**. Using user defined function

```
def test_prime(n):
    if (n==1):
        return False
    elif (n==2):
        return True;
    else:
        for x in range(2,n):
            if(n % x==0):
                return False
        return True

print(test_prime(9))
x=int(input('Enter a number'))
print(test_prime(x))
```

## QUESTIONS- lec-6-6.py

- 10. Write a python program that check if a given positive integer is a power of two.

Ex: Input : 4  Output : True

```python
#lec-6-6.py
def is_Power_of_two(n):
    return n > 0 and (n & (n - 1)) == 0

print(is_Power_of_two(4))
print(is_Power_of_two(36))
print(is_Power_of_two(16))
```

## QUESTIONS- lec-6-8.py

```python
#lec-6-8.py
# """ Calculate square root of numbers 0 to 100"""
from math import *
i = 0
while i<= 100:
    print (i, "\t\t" , sqrt(i))
    i = i + 1
print("END")
```

## QUESTIONS- lec-6-9.py

Write a Python function to check whether a number is in a given range.

```python
#lec-6-9.py
def test_range(n):
    if n in range(3,9):
        print( " %s is in the range"%str(n))
    else :
        print("The number is outside the given
range.")

test_range(5)
```