Data Science & Machine Learning with python(AI Quest)

Home Work : class 02

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Green colour indicate output

1. Write a program that swaps the values of two variables?

   Ans:

   ```
   a=1
   b=2
   temp =a
   a=b
   b=temp
   print(a)
   2
   print(b)
   1
   ```

2. Write a program that calculates the area of a rectangle given its length and width?

   Ans:

   ```
   length=10
   width=6
   area= length*width
   print(area)
   60
   ```

3.Write a program that converts temperature from Fahrenheit to Celsius.
Ans;

```
Fahrenheit = 98
Celsius = ((Fahrenheit- 32)*5)/9
print(Celsius)
```
36.666666666666664

4. Write a program that calculates the volume of a sphere given its radius.
Ans;

```
radius=10
pi=3.1416
volume=(4/3)*pi*radius**3
print(volume)
```
4188.799999999999

5. Write a program that finds the average of three numbers.

```
a=1
b=2
c=3
Avg =(a+b+c)/3
print(Avg)
```
2

6.Write a program that determines if a number is even or odd.
Ans:

```
 n=int(input('enter a number:'))
if n%2==0:
    print('even number')
```

```
else:
    print('odd number')
enter a number:6
even number
```

7. Write a program that finds the maximum of three numbers.

Ans:

```
list =[10,9,3,6,12,76]
max =list[0]
for number in list:
    if (number>max):
        max=number
print('max:',max)
76
```

8. Write a program that determines if a year is a leap year or not.

Ans:

```
year=int(input('enter the year:'))
if(year%400==0) and (year%100==0):
    print(year,'is leap year')
elif (year%4==0) and (year%100 !=0):
    print(year,'is leap year')
else:
    print(year,'is not leap year')
enter the year:2024
2024 is leap year
```

9. Write a program that determines if a number is positive, negative, or zero.

ans:

```
a=int(input('enter a number:'))
if a>0:
```

```
    print('positive')
elif a<0:
    print('negetive')
else:
    print("zero")
```

enter a number:-9
Negetive

10. Write a program that calculates the grade based on a given percentage.

Ans:

```
sub1=int(input('math:'))
sub2=int(input('physics:'))
sub3=int(input('chemistry:'))
sub4=int(input('biology:'))
sub5=int(input('higher math:'))
total=sub1+sub2+sub3+sub4+sub5
print('toatal score:',total)
percentage =(total/500)*100
print('percentage=',percentage,'%')
```

math:10
physics:20
chemistry:30
biology:40
higher math:50
toatal score: 150
percentage= 30.0 %

11.Write a program that prints the first `n` natural numbers.

Ans:

```
n=int(input('enter a number'))
for i in range(1,n+1):
    print(i, end=',')
```

```
enter a number12
1,2,3,4,5,6,7,8,9,10,11,12,
```

12.Write a program that calculates the factorial of a number.

Ans:

```
n=int(input('enter a number:'))
factorial=1
for i in range(1,n+1):
    factorial=factorial *i
print(factorial)
```

```
enter a number:5
120
```

13.Write a program that generates a Fibonacci sequence of length `n`.

Ans:

```
n=10
n1=0
n2=1
i=0
while i<n:
    print(n1)
    nth = n1+n2
    n1=n2
    n2=nth
    i+=1
```

```
0
1
1
2
3
5
8
13
21
34
```

14.Write a program that checks if a given number is prime or not.

Ans:

```
num=int(input("enter a number:"))
if num<=1:
    print( num,'is not a prime number')
else:
    for i in range(2,num):
        if (num%i)==0:
            print (num,'is not a prime number')
            break
    else:
        print (num,'is not a prime number')
```

```
enter a number:20
20 is not a prime number
enter a number:17
17 is a prime number
```

15. Write a program that prints the multiplication table of a given number

Ans:

```
n=int(input('enter a number:'))
for i in range(1,11):
    print(n,"*",i,'=',n*i)
```

```
enter a number:6
6 * 1 = 6
6 * 2 = 12
6 * 3 = 18
6 * 4 = 24
6 * 5 = 30
6 * 6 = 36
6 * 7 = 42
6 * 8 = 48
6 * 9 = 54
6 * 10 = 60
```

16. Write a program that finds the sum of all even numbers between 1 and `n`.
Ans:

```
n=int(input('enter a number:'))
sum=n*(n+1)*0.5
i=1
print(sum)
```

```
enter a number:10
55.0
```

OR:

```
n=int(input('enter a number:'))
i=1
sum=0
while (i<=n):
    sum=sum+i
    i=i+1
print('sum of even numbers',sum)
```

```
enter a number:10
55.0
```

17. Write a program that reverses a given number.
Ans:

```
n=int(input('enter a number:'))
```

```
rev=0
while (n>0):
    rev=(rev*10)+n%10
    n=n//10
print("Reverse number is:", rev)
```
```
enter a number:123
Reverse number is: 321
```

18. Write a program that checks if a given string is a palindrome.
Ans:
```
a=input('enter a strings:')
b=a[-1::-1]
if (a==b):
    print("palindrome")
else:
    print("Not palindrome")
```
```
enter a strings:dad
palindrome
enter a strings:Roman
Not palindrome
```

19. Write a program that generates a random number and allows the user to guess it.
Ans:
```
import random
computer=random.randrange(1,51)
usernumber=int(input("enter the number:"))
if usernumber>computer:
    print("your guess number is too high")
elif computer>usernumber:
    print("your guess number is too low")
else:
    print("your guess number is equal")
```

```
enter the number:33
your guess number is too high

enter the number:11
your guess number is equal

enter the number:12
your guess number is too low
```

20. Write a program that finds the greatest common divisor (GCD) of two numbers.

Ans:

```
n1=int(input('enter first number:'))
n2=int(input('enter second number:'))
if n1>n2:
    min=n2
else:
    min=n1
for i in range(1,min+1):
    if (n1%i==0 and n2%i==0):
        hcf=i
        lcf=i
print("hcf of two numbers is",hcf)
```

```
enter first number:4
enter second number:3
hcf of two numbers is 1
```