ASSIGNMENT – 2 (DATED : 30TH JANUARY 2023)

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Q1. Write a program to accept percentage from the user and display the grade according to the Following Criteria:

Marks	Grade
>90	A
>80 and <=90	B
>=60 and <=80	C
Below 60	D

Solution:

```
Percentage_obtained = (float(input("Enter your Percentage :")))
if(Percentage_obtained > 90):
    print("You got 'A' grade")
elif(Percentage_obtained >80 and Percentage_obtained <=90):
    print("You got 'B' grade")
elif(Percentage_obtained >=60 and Percentage_obtained <=80):
    print("You got 'c' grade")
else:
    print("You got 'D' grade")
```

```
Enter your Percentage : 45.30
You got 'D' grade
```

```
Percentage_obtained = (float(input("Enter your Percentage :")))
if(Percentage_obtained > 90):
    print("You got 'A' grade")
elif(Percentage_obtained >80 and Percentage_obtained <=90):
    print("You got 'B' grade")
elif(Percentage_obtained >=60 and Percentage_obtained <=80):
    print("You got 'c' grade")
else:
    print("You got 'D' grade")
```

```
Enter your Percentage : 65.20
You got 'c' grade
```

```
Percentage_obtained = (float(input("Enter your Percentage :")))
if(Percentage_obtained > 90):
    print("You got 'A' grade")
elif(Percentage_obtained >80 and Percentage_obtained <=90):
    print("You got 'B' grade")
elif(Percentage_obtained >=60 and Percentage_obtained <=80):
    print("You got 'c' grade")
else:
    print("You got 'D' grade")
```

```
Enter your Percentage : 82.10
You got 'B' grade
```

```
Percentage_obtained = (float(input("Enter your Percentage :")))
if(Percentage_obtained > 90):
    print("You got 'A' grade")
elif(Percentage_obtained >80 and Percentage_obtained <=90):
    print("You got 'B' grade")
elif(Percentage_obtained >=60 and Percentage_obtained <=80):
    print("You got 'c' grade")
else:
    print("You got 'D' grade")
```

```
Enter your Percentage : 95.48
You got 'A' grade
```

Q2. Write a program to accept the cost price of a bike and display the road tax to be paid according to the following criteria:

Tax	Cost price(in Rs.)
15%	>100000
10%	>50000 and <= 100000
5 %	<=50000

Solution:

- ***When cost price is greater than ₹ 100000. Tax implemented 15%***

```
price_of_bike = (int(input("Enter cost price of bike:")))
if(price_of_bike > 100000):
    print("Road tax to be paid:" , price_of_bike * 0.15)
elif(price_of_bike > 50000 and price_of_bike <= 100000):
    print("Road tax to be paid:" , price_of_bike * 0.10)
else:
    print("Road tax to be paid:" , price_of_bike * 0.05)
```

```
Enter cost price of bike: 100100
Road tax to be paid: 15015.0
```

- ***When cost price is greater than ₹ 50000 & less than ₹100000.***
- ***Tax implemented 10%***

```
price_of_bike = (int(input("Enter cost price of bike:")))
if(price_of_bike > 100000):
    print("Road tax to be paid:" , price_of_bike * 0.15)
elif(price_of_bike > 50000 and price_of_bike <= 100000):
    print("Road tax to be paid:" , price_of_bike * 0.10)
else:
    print("Road tax to be paid:" , price_of_bike * 0.05)
```

```
Enter cost price of bike: 55000
Road tax to be paid: 5500.0
```

- ***When cost price is & less than ₹50000.***
- ***Tax implemented 5%***

```
price_of_bike = (int(input("Enter cost price of bike:")))
if(price_of_bike > 100000):
    print("Road tax to be paid:" , price_of_bike * 0.15)
elif(price_of_bike > 50000 and price_of_bike <= 100000):
    print("Road tax to be paid:" , price_of_bike * 0.10)
else:
    print("Road tax to be paid:" , price_of_bike * 0.05)
```

```
Enter cost price of bike: 45000
Road tax to be paid: 2250.0
```

Q3. Accept any city from the user and display monuments of that city.

City	Monument
Delhi	Red Fort
Agra	Taj Mahal
Jaipur	Jal Mahal

Solution:

```
city = 'Delhi', 'Jaipur' , 'Agra'
print(city)

n_city = input("Select any one city from above:")
if(n_city.title() == 'Delhi'):
    print("Famous monument of  Delhi is Red Fort")
elif(n_city.title() == 'Jaipur'):
    print("Famous monument of  Jaipur is Jal Mahal")
elif(n_city.title() == 'Agra'):
    print("Famous monument of  Agra is Taj Mahal")
else:
    print("please select city from the list given")
```

```
('Delhi', 'Jaipur', 'Agra')
Select any one city from above: delhi
Famous monument of  Delhi is Red Fort
```

```
city = 'Delhi', 'Jaipur' , 'Agra'
print(city)

n_city = input("Select any one city from above:")
if(n_city.title() == 'Delhi'):
    print("Famous monument of  Delhi is Red Fort")
elif(n_city.title() == 'Jaipur'):
    print("Famous monument of  Jaipur is Jal Mahal")
elif(n_city.title() == 'Agra'):
    print("Famous monument of  Agra is Taj Mahal")
else:
    print("please select city from the list given")
```

```
('Delhi', 'Jaipur', 'Agra')
Select any one city from above: Jaipur
Famous monument of  Jaipur is Jal Mahal
```

```
city = 'Delhi', 'Jaipur' , 'Agra'
print(city)

n_city = input("Select any one city from above:")
if(n_city.title() == 'Delhi'):
    print("Famous monument of  Delhi is Red Fort")
elif(n_city.title() == 'Jaipur'):
    print("Famous monument of  Jaipur is Jal Mahal")
elif(n_city.title() == 'Agra'):
    print("Famous monument of  Agra is Taj Mahal")
else:
    print("please select city from the list given")
```

```
('Delhi', 'Jaipur', 'Agra')
Select any one city from above: agra
Famous monument of  Agra is Taj Mahal
```

```
city = 'Delhi', 'Jaipur' , 'Agra'
print(city)

n_city = input("Select any one city from above:")
if(n_city.title() == 'Delhi'):
    print("Famous monument of  Delhi is Red Fort")
elif(n_city.title() == 'Jaipur'):
    print("Famous monument of  Jaipur is Jal Mahal")
elif(n_city.title() == 'Agra'):
    print("Famous monument of  Agra is Taj Mahal")
else:
    print("please select city from the list given")
```

```
('Delhi', 'Jaipur', 'Agra')
Select any one city from above: mumbai
please select city from the list given
```

Q4. Check how many times a given number can be divided by 3 before it is less than or Equal to 10.

Solution:

- ***The question is asking to determine how many times a given number can be divided by 3 before the result becomes less than or equal to 10.***
  Let's take an example to understand this better:

Suppose the given number is 99. We start by dividing it by 3:
99 ÷ 3 = 33
33 is still greater than 10, so we divide it by 3 again:
33 ÷ 3 = 11
11 is still greater than 10, so we divide it by 3 again:
11 ÷ 3 = 3.66…..
3.66.. is less than 10, so we stop.

```
num = int(input("Enter a number: "))
count = 0
while num > 10:
    num = num // 3
    count += 1
print("The number of times the entered number can be divided by 3 before becoming less than or equal to 10 is:", count)
```

```
Enter a number:  99
The number of times the entered number can be divided by 3 before becoming less than or equal to 10 is: 3
```

- ***The question is asking to determine how many times a given number can be divided by 3 before the result becomes less than or equal to 10.***
  Let's take an example to understand this better:

Suppose the given number is 50. We start by dividing it by 3:
50 ÷ 3 = 16.666….
16.666… is still greater than 10, so we divide it by 3 again:
16.666… ÷ 3 = 5.5533…
5.5533.. is less than 10, so we stop.

```
num = int(input("Enter a number: "))
count = 0
while num > 10:
    num = num // 3
    count += 1
print("The number of times the entered number can be divided by 3 before becoming less than or equal to 10 is:", count)
```

```
Enter a number:  50
The number of times the entered number can be divided by 3 before becoming less than or equal to 10 is: 2
```

Q5. Why and when to use while loop in python give a detailed description with example.

Solution:

- ***Why while loop?***
  - ✓ ***Like all loops, "while loops" execute blocks of code over and over again.***
  - ✓ ***The advantage to a while loop is that it will go (repeat) as often as necessary to accomplish its goal.***
- ***When to use while loop?***
  - ✓ ***The while loop is used to repeat a section of code an unknown number of times until a specific condition is met.***
- ***Example1:***
- ***With the while loop we can execute a set of statements as long as a condition is true.***
  - ✓ ***Print i as long as i is less than 10:***
  - ✓ ***The while loop requires relevant variables to be ready, in this example we need to define an indexing variable, i, which we set to 1.***
  - ✓ ***Remember to increment i, or else the loop will continue forever.***

```
i = 1
while i < 10:
  print(i)
  i += 1
```

```
1
2
3
4
5
6
7
8
9
```

- ***Example2:***
- ***With the break statement we can stop the loop even if the while condition is true:***
  - ✓ ***Exit the loop when i is 5:***

```
i = 1
while i < 10:
  print(i)
  if i == 5:
    break
  i += 1
```

```
1
2
3
4
5
```

- ***With the continue statement we can stop the current iteration, and continue with the next:***
  - ✓ ***Continue to the next iteration if i is 5:***

```
i = 0
while i < 10:
  i += 1
  if i == 5:
    continue
  print(i)
```

```
1
2
3
4
6
7
8
9
10
```

- ***With the else statement we can run a block of code once when the condition no longer is true:***
  - ✓ ***Print a message once the condition is false:***

```
i = 1
while i < 10:
  print(i)
  i += 1
else:
  print("i is no longer less than 10")
```

```
1
2
3
4
5
6
7
8
9
i is no longer less than 10
```

Q6. Use nested while loop to print three different patterns.

Solution:

- ***What is nested while loop?***
  - ✓ ***While loop body can contain statements, we can write while loop inside while loop. While loop inside another while loop is called Nested While Loop.***
- ***Pattern 1***

```
i = 0
while(i<5):
    j=i+1
    while(j>0):
        print("*",end= " ")
        j=j-1
    i=i+1
    print()
```

```
*
* *
* * *
* * * *
* * * * *
```

- ***Pattern 2***

```
i = 1
while i <= 5 :
    j = 5
    while j >= i:
        print("*", end = " ")
        j -= 1
    print()
    i += 1
```

```
* * * * *
* * * *
* * *
* *
*
```

- ***Pattern 3***

```
i = 5
while(i>=1):
    print(" "*(5-i) + "*" * i)
    i-=1
```

```
*****
 ****
  ***
   **
    *
```

Q7. Reverse a while loop to display numbers from 10 to 1.

Solution:

```
print("====The First 10  Numbers in Reverse====")
i = 10

while(i >= 1):
    print(i)
    i = i - 1
```

```
====The First 10  Numbers in Reverse====
10
9
8
7
6
5
4
3
2
1
```