### Assignment 2 ###

## Q1-Write a Program to accept percentage from a user and display the grade according to the following criteria:

marks=int(input("Enter the Marks Obtained: "))

if marks>90:

print("obtained grade is: A")

elif marks>80 and marks<=90:

print("Obtained Grade is: B")

elif marks>=60 and marks<=80:

print("Obtained Grade is: C")

else:

print("Obtained Grade is: D")

### 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:

road\_tax=int(input("Cost Price of a Bike: "))

if road\_tax>100000:

print("Road Tax to be paid for the bike is: 15%")

elif road\_tax>50000 and road\_tax<=100000:

print("Road Tax to be paid for the bike is: 10%")

else:

print("Road Tax to be paid for the bike is: 5%")

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

city=input("Enter the City name: ")

if city=="Delhi":

print("The Monument is: Red Fort")

elif city=="Agra":

print("The Monument is: Taj Mahal")

elif city=="Jaipur":

print("The Monument is: Jai Mahal")

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

number = int(input("Enter a number: "))

count = 0

while number > 10:

number = number // 3

count += 1

print("The number can be divided by 3", count, "times before it is less than or equal to 10.")

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

ANS:- **A while loop in Python is used when you want to execute a block of code repeatedly as long as a condition is true. It allows you to automate repetitive tasks, perform iterative operations, and handle unpredictable user input or data**

**The condition is a Boolean expression that is evaluated at the beginning of each iteration of the loop. If the condition is True, the block of code inside the loop is executed, and then the condition is evaluated again. This continues until the condition becomes False, at which point the loop terminates and the program continues to execute the code after the loop.**

**Here's an example of using a while loop to print the first 10 numbers in the Fibonacci sequence:**

**# initialize the first two numbers in the sequence**

**a, b = 0, 1**

**# use a while loop to print the next 8 numbers**

**i = 0**

**while i < 8:**

**c = a + b**

**print(c)**

**a = b**

**b = c**

**i += 1**

**Q6: Use nested while loop to print 3 different pattern.**

**# print a square of asterisks using nested while loops**

**i = 0**

**while i < 5:**

**j = 0**

**while j < 5:**

**print("\*", end="")**

**j += 1**

**print()**

**i += 1**

**Output:-**

**\*\*\*\*\***

**\*\*\*\*\***

**\*\*\*\*\***

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**# print a right-angled triangle of numbers using nested while loops**

**i = 1**

**while i <= 5:**

**j = 1**

**while j <= i:**

**print(j, end="")**

**j += 1**

**print()**

**i += 1**

**Output:-**

**1**

**12**

**123**

**1234**

**12345**

**# print a diamond of spaces and asterisks using nested while loops**

**n = 5**

**i = 1**

**while i <= n:**

**# print the top half of the diamond**

**j = 1**

**while j <= n - i:**

**print(" ", end="")**

**j += 1**

**j = 1**

**while j <= 2 \* i - 1:**

**print("\*", end="")**

**j += 1**

**print()**

**i += 1**

**i = n - 1**

**while i >= 1:**

**# print the bottom half of the diamond**

**j = 1**

**while j <= n - i:**

**print(" ", end="")**

**j += 1**

**j = 1**

**while j <= 2 \* i - 1:**

**print("\*", end="")**

**j += 1**

**print()**

**i -= 1**

**Output:-**

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**Q 7 Reverse a while loop to display numbers from 10 to 1**

**number = 67890**

**reversed\_number = 0**

**while number != 0:**

**digit = number % 10**

**reversed\_number = reversed\_number \* 10 + digit**

**number //= 10**

**print(reversed\_number)**