Ex.No.1 13.12.23	USES OF CONTROL STATEMENTS IN PYTHON	Reg.No: URK23CS1261

1 A). Write a program to find the factorial of a number using while loop.

Aim: The objective of this program is to find the factorial of a number using while loop.

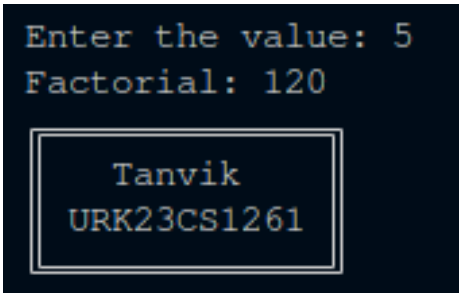
Algorithm:

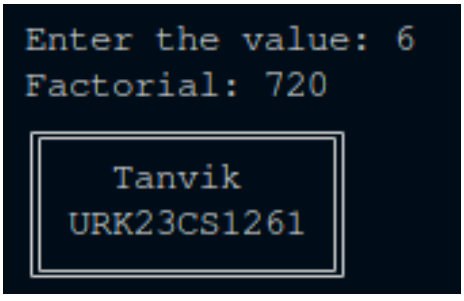
Step 1: Start the program.
Step 2: Declare a variable ‘num’ for storing input from user.
Step 3: Define a function called ‘factorial’ with parameter ‘num’.
Step 4: Declare variables ‘fact’ and assign value as 1 then another variable ‘i’ for iteration.
Step 5: Use a while loop to calculate factorial.
Step 6: Return the factorial value.
Step 7: Calculate factorial using the function.
Step 8: Print the factorial.
Step 9: Stop.

Program:

```
def factorial(num):
    fact = 1
    i = num-1
    while i > 0:
        fact *= num-i+1
        i-=1
    return fact

num = int(input("Enter the value: "))
fact = factorial(num)
print(f"Factorial: {fact}")

print("╔═══════════════════╗\n║   Tanvik    ║\n║ URK23CS1261 ║\n╚═══════════════════╝")
```

Output:





Result: Thus, The program has successfully produced the desired output.

1 B) Write a Python program to check whether a number is Prime or not.

Aim: The objective of this program is to find the given number is whether prime or not.

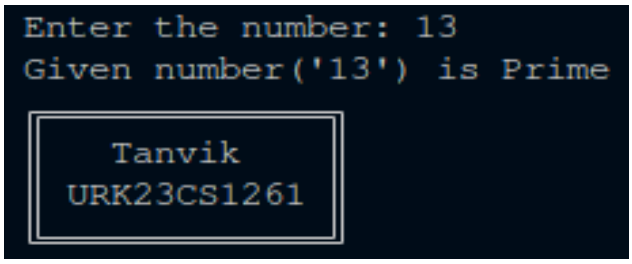
Algorithm:

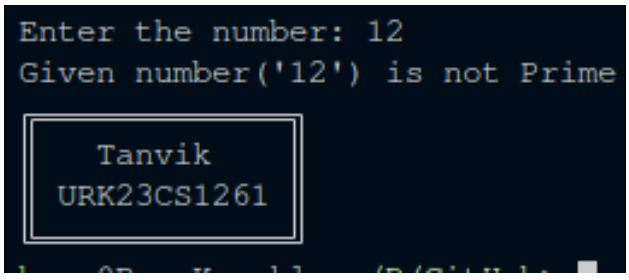
Step 1: Start the program.
Step 2: Declare a variable ‘num’ for storing input from user.
Step 3: Check if the number is prime or not.
Step 4: If the number satisfies the conditions, print that it is a prime number.
Step 5: If the number doesn't meet the conditions, print that it is not a prime number.
Step 6: Stop.

Program:

```
num = int(input("Enter the number: "))

if((num % 2) != 0 or num == 2):
   print(f"Given number('{num}') is Prime")

else :
   print(f"Given number('{num}') is not Prime")

print("╔═══════════════════════╗\n║   Tanvik    ║\n║ URK23CS1261 ║\n╚═══════════════════════╝")
```

Output:





Result: Thus, The program has successfully produced the desired output.

1 C) Write a Python program to print alphabet pattern 'E'.

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

Aim: The objective of this program is to print alphabet pattern 'E'.

Algorithm:

Step 1: Start the program.
Step 2: Use for to loop ‘i’ for 5 times using range.
Step 3: Check if the ‘i’ is equal to 0 or 4 or 2.
Step 4: If the number satisfies the conditions, print ‘*’ five times.
Step 5: If the number doesn't meet the conditions, print ‘*’ one time.
Step 6: Stop.

Program:

```
for i in range(5):
    if i == 0 or i == 4 or i == 2:
        print("*" * 5)
    else:
        print("*")

print("╔═══════════════════╗\n║   Tanvik    ║\n║ URK23CS1261 ║\n╚═══════════════════╝")
```

Output:

Result: Thus, The program has successfully produced the desired output.

1 D) Write a Python program that iterates the integers from 1 to 15. For multiples of two print "Karunya" instead of the number and for the multiples of three print "University". For numbers which are multiples of both two and three print "KarunyaUniversity".

Aim: The objective of this program is to iterate through integers from 1 to 15. For multiples of two, it will print 'Karunya' instead of the number, and for multiples of three, it will print 'University'. If a number is a multiple of both two and three, it will print 'KarunyaUniversity'."

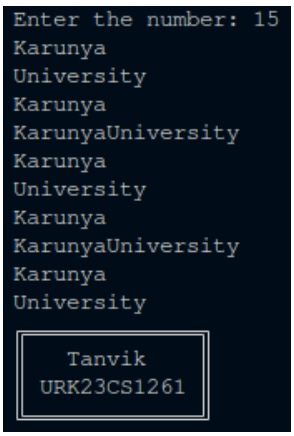
Algorithm:

Step 1: Start the program.
Step 2: Declare a variable ‘num’ for storing input from user.(15)
Step 3: Declare two strings 'str1' as "Karunya" and 'str2' as "University".
Step 4: Iterate through the range from 1 to 'num'.
Step 5: For each number in the range:
  a. Check if the number is a multiple of both 2 and 3.
    i. If true, print the concatenation of 'str1' and 'str2'.
  b. Check if the number is a multiple of 2.
    i. If true, print 'str1'.
  c. Check if the number is a multiple of 3.
    i. If true, print 'str2'.
Step 6: Stop.

Program:

```
num = int(input("Enter the number: ")) #15
str1 = "Karunya"
str2 = "University"
for x in range(1,num+1):
    if(x % 2 == 0 and x % 3 == 0):
        print(str1+str2)
    elif(x % 2 == 0):
        print(str1)
    elif(x % 3 == 0):
        print(str2)
print("╔═══════════════════╗\n║   Tanvik    ║\n║ URK23CS1261 ║\n╚═══════════════════╝")
```

Output:



Result: Thus, The program has successfully produced the desired output.

1 E) Write a python program to check whether the number is palindrome or not.

Aim: The objective of this program is to check whether the number is palindrome or not.

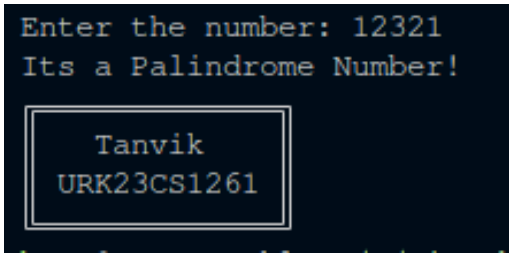
Algorithm:

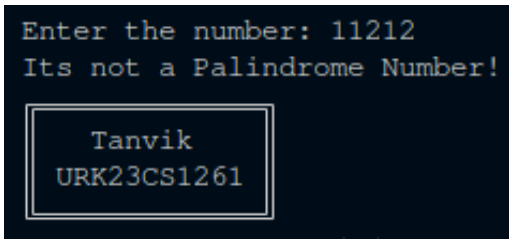
Step 1: Start the program.
Step 2: Declare a variable ‘num’ for storing input from user.
Step 3: Initialize variables 'pal' and 'i' with 'num'.
Step 4: Use a 'while' loop to reverse the number 'num' and store it in 'pal'.
Step 5: Check if the reversed number 'pal' is equal to the original number 'num'.
  a. If they are equal, print that it is a palindrome number.
  b. If they are not equal, print that it is not a palindrome number.
Step 6: End the program.
Step 6: Stop.

Program:

```
num = int(input("Enter the number: "))
pal, i= 0,num
while i > 0:
   pal = pal* 10 + (i % 10)
   i //= 10
if(pal== num):
   print("Its a Palindrome Number!")
else:
   print("Its not a Palindrome Number!")

print("╔═══════════════════════╗\n║   Tanvik    ║\n║ URK23CS1261 ║\n╚═══════════════════════╝")
```

Output:





Result: Thus, The program has successfully produced the desired output.

1 F) Write a python program to check whether the number is Armstrong number or not.

Aim: The objective of this program is to check whether the number is Armstrong number or not.

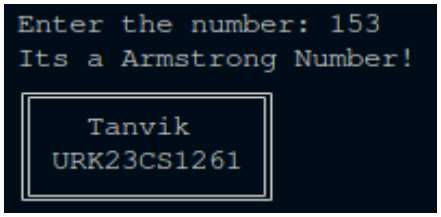
Algorithm:

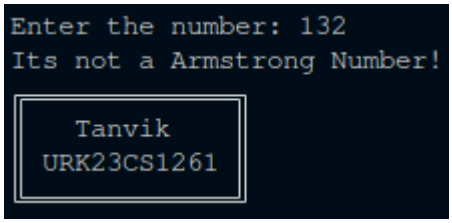
Step 1: Start the program.
Step 2: Declare a variable num for storing input from user.
Step 3: Initialize variables 'arm' and 'i' with 'num'.
Step 4: Use a 'while' loop to calculate the Armstrong number.
   a. Extract the last digit of 'i' and add its cube to 'arm'.
   b. Update 'i' by removing its last digit.
Step 5: Check if the calculated 'arm' is equal to the original number 'num'.
   a. If they are equal, print that it is an Armstrong number.
   b. If they are not equal, print that it is not an Armstrong number.
Step 6: Stop.

Program:

```
num = int(input("Enter the number: "))
arm, i= 0, num
while i > 0:
    arm += (i % 10) ** 3
    i //= 10
if(arm== num):
    print("Its a Armstrong Number!")
else:
    print("Its not a Armstrong Number!")
print("╔═══════════════════╗\n║   Tanvik    ║\n║ URK23CS1261 ║\n╚═══════════════════╝")
```

Output:





Result: Thus, The program has successfully produced the desired output.