

SSN COLLEGE OF ENGINEERING

(Autonomous - Affiliated to Anna University)

DEPARTMENT OF CSE

UGE2197 PROGRAMMING IN PYTHON LABORATORY

Ex 4: Python Programming using Loops

Using “While” Loop

Part – A (Mandatory)

1. Compute Exponentiation (power of a number) without using ** operator.
2. Print the sum of all the digits of a number.
3. Print all the two digit numbers which are either divisible by 3 or by 4.
4. Perform the division operation and find the quotient and remainder values. (Without using /, // % operators)
5. Check whether the given number is palindrome or not
6. Check whether the entered number is an Armstrong number or not. For example: $153 = 1^3 + 5^3 + 3^3 = 153$ is an Armstrong number
7. Compute the GCD of two numbers.
8. Write a python program for the below mentioned scenario. Program will require a input in voltage if it is 5 V, then it is active if less than 5V, it is CUTOFF ,if greater than 5V it is Breakdown .Your program will continue to ask for input voltage until you enter a CUTOFF VOLTAGE. In addition, the program will terminate if there is a Breakdown voltage as input.
9. Write a program to find the square root of a number using Newton’s method

Use “For” loop:

10. Print the nth multiplication table.
11. Print all the prime numbers between 1 to 100
12. Find the factorial of a number.
13. Write python programs to print the following sequences,
 - a. 1,3,9,27,81,243...
 - b. -4, -4, -,2,4
 - c. 1,8,27,64...
14. Find the sum of series:
 - a. $1 + x^2/2 + x^3/3 + \dots x^n/n$
 - b. $-x + x^2 - x^3 + x^4 + \dots$
15. Print the Fibonacci series up to N numbers.
Ex: Fibonacci Series = 0 1 1 2 3 5 8 13 21....
16. Write a Python program that prints all the numbers from 0 to 7 except 3 and 6.
Note: Use 'continue' statement
17. Print the following patterns

1	*	1
2 1	* *	1 1
3 2 1	* * *	1 2 1
4 3 2 1	* * * *	1 3 3 1
	* * * * *	1 4 6 4 1
		1 5 10 10 5 1
		1 6 15 20 15 6 1

Part – B (Optional)

1. (Financial application: compute future tuition) Suppose that the tuition for a university is \$10,000 this year and increases 5% every year. Write a program that computes the tuition in ten years and the total cost of four years' worth of tuition starting ten years from now.
2. (Find the highest score) Write a program that prompts the user to enter the number of students and each student's score and displays the highest score and second highest score.
3. Write a program to convert a binary number to decimal number and vice versa using loops.
4. Print the following Pattern:

a.

```

*
* *
* * *
* * * *
* * * * *
* * * *
* * *
* *
*

```

5.

5. Write a Python program to print the following patterns

```

5
4 5
3 4 5
2 3 4 5
1 2 3 4 5

5
4 4
3 3 3
2 2 2 2
1 1 1 1 1

```

6. Develop and test a Python program that calculates the monthly mortgage payments for a given loan amount, term (number of years) and range of interest rates from 3% to 18%.

amount, and D is the discount factor. The discount factor is calculated as, $D = \frac{(1+r)^n - 1}{r(1+r)^n}$, where n is the number of total payments (12 times the number of years of the loan) and r is the interest rate, expressed in decimal form (e.g., .05), divided by 12. A monthly payment table should be generated as shown below,

Loan Amount: \$350,000 **Term:** 30 years

Interest Rate	Monthly Payment
3%	1475.61
4%	1670.95
5%	1878.88
6%	2098.43
. .	
. .	
18%	5274.80

Check your results with an online mortgage calculator.

The fundamental formula for determining this is A/D , where A is the original loan
