

UG Programming Lab (MCSC-106)
Dept. of Computer Science, Assam University Silchar
Lab Assignment on Programming with Python (Part-I)

About Python -

Python is an open source programming language. It can run on multiple platforms- Windows, Mac OS, Linux/Unix etc. It can even be ported to java and .NET frameworks. It has two modes of operations-i) Immediate Mode and ii) Script Mode.

- In immediate mode of operations(>>>), commands are directly interpreted through the command line editor. One can directly type in Python expressions and press enter to get the output. E.g. if we type 1+1 and press enter, 2 will be displayed. This prompt can be used as calculator. To exit from this mode, type exit() or quit() and press enter.
- In case of script mode, python programs are written in a file and saved with a file extension dot py(.py). For example testprogram.py. Such a file is called a script. To execute this program we simply write, python testprogram.py (already saved program name with .py extension) at the command prompt.

Python has a lot more applications range. Python offers many choices for web development (e.g. Django, Pyramid, Flask & Bottle etc.). Python's standard library supports many internet protocols like- HTML and XML, JSON, E-mail Processing, FTP, IMAP etc. Python is widely used in Scientific and Numerical Computing. (e.g. SciPy, Panda, IPython etc.)

List of Programs to be covered (Part-I) -

1. Program to print "Hello, Python"
2. Using Comments, Newlines and Spaces
3. Keywords and Statements
4. Python variables and data types
5. Variable pre assignment and user inputs
6. Python output Formatting
7. Python Program for Addition of Two numbers (Pre-assigned and user Provided)
8. Python Program for all mathematical operations (+, -, /, *, **, //, % etc.)
9. Python Program for finding Square root(Positive integers and complex numbers)
10. Python Program for calculating the area of Triangle, Rectangle, Circle, Sphere etc.
11. Python Program for finding the roots of a Quadratic Equation($ax^{**2}+b*x+c=0$, a, b & c are real and $a!=0$)

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12. Python Program for swapping values of two variables(using third variable and without using third variables)
13. Python Program for generating random numbers.
14. Python Program to convert Kilometres to Miles
15. Python Program to convert Celsius to Fahrenheit
16. Python Program to check if a number is positive, negative or zero.(if-else and nested if-else)
17. Python Program to check if a number is Odd or Even
18. Python Program check Leap year
19. Python Program to find largest/smallest among three numbers
20. Python Program to check a Prime number
21. Python Program to print all the Prime numbers in an interval
22. Python Program to find the factorial of a given number
23. Python Program to print the multiplication table of a given number
24. Python Program to print the Fibonacci Sequence up to n-terms
25. Python Program to check Armstrong number(n-digits)
26. Python Program to find the sum of n-Natural Numbers
27. Python Program to display powers of a number up to n-terms
28. Python Program to find numbers in a range divisible by another number
29. Python Program to find the ASCII values of a character
30. Python Program to find the Highest Common Factor (HCF) between two numbers
31. Python Program to find Least Common Multiple (LCM) of two numbers
32. Python Program to find factors of a given number
33. Python Program for using functions (Choice based calculator)
34. Python Program to display calendar of a given month
35. Python Program for using recursion
36. Python Program for array operations (1-D & 2-D arrays only)
37. Python Program to show matrix operations(Transpose, Addition, Subtraction, and Multiplication)
38. Python Program to reverse a given string (Check for Palindrome)

NB:-This Course covers the above programming concepts but not limited to the above programs