# Sreenidhi Institute of Science and Technology
# Department of Computer Science and Engineering
# B.Tech Computer Science and Engineering

**Name of the lab:**  Python Programming Lab

**Lab Number:**  2102

**Number of systems:**  35

## HARDWARE DETAILS

| S.NO | NAME OF THE HARDWARE | MANUFACTURER |
|:---:|:---:|:---|
| 1 | Make | HP |
| 2 | Model | HP 280 G2 SFF, HP 280 G2 MT |
| 3 | Memory | 4GB RAM |
| 4 | Processor | Intel Core i3 6100 Processor |
| 5 | Hard Disk(HDD) | 1TB HDD |
| 6 | SMPS | ATX |
| 7 | Monitor | Hp18.5" LED Monitors |
| 8 | Keyboard | Hp |
| 9 | Mouse | Hp |

# SOFTWARE DETAILS

| S.NO | NAME OF THE SOFTWARE | SOURCE |
|---|---|---|
| 1 | KasperSky Endpoint Security | Licensed |
| 2 | WINDOWS 7  Professional | Licensed |
| 3 | Ubuntu | Open Source |
| 4 | Gcc Compiler | Open Source |
| 5 | LEX Tool | Open Source |
| 6 | YACC Tool | Open Source |
| 7 | Putty | Open Source |
| 8 | Turbo C++ | Open Source |
| 9 | JDK 1.7 | Open Source |

## List of Experiments in Python Programming Lab

**Week -1:**

1. Use a web browser to go to the Python website http://python.org. This page contains information about Python and links to Python-related pages, and it gives you the ability to search the Python documentation.
2. Start the Python interpreter and type help() to start the online help utility.
3. Start Python interpreter and use it as Calculator.

**Week -2:**

4. If you run a 10 kilometer race in 43 minutes 30 seconds, what is your average time per mile? What is your average speed in miles per hour? (Hint: there are 1.61 kilometers in a mile).
5. The volume of a sphere with radius r is 5? (Use Sphere volume formula)
6. Suppose the cover price of a book is $24.95, but bookstores get a 40% discount.
   Shipping costs $3 for the first copy and 75 cents for each additional copy. What is

the total wholesale cost for 60 copies?

**Week -3:**

7. A function object is a value you can assign to a variable or pass as an argument. For
   example, do_twice is a function that takes a function object as an argument and calls it
   twice:
   def do_twice(f):
   f()
   f()
   Here's an example that uses do_twice to call a function named print_spam twice.
   def print_spam():
   print 'spam'
   do_twice(print_spam)

   a. Type this example into a script and test it.
   b. Modify do_twice so that it takes two arguments, a function object and a value, and
calls
      the function twice, passing the value as an argument.
   c. Write a more general version of print_spam, called print_twice, that takes a string
       as a parameter and prints it twice.
   d. Use the modified version of do_twice to call print_twice twice, passing 'spam' as
       an argument.
8. Write a function that draws a grid like the following:
9. + - - - - + - - - - +
|        |        |
|        |        |
|        |        |
+ - - - - + - - - - +
|        |        |
|        |        |
|        |        |
|        |        |
+ - - - - + - - - - +
       Hint: to print more than one value on a line, you can print a comma-separated
       sequence.
   10. Write a function called gcd that takes parameters a and b and returns their
       greatest common divisor.
   11. Write a function called is_palindrome that takes a string argument and returns
       True if it is a palindrome and False otherwise. Remember that you can use the
        built-in function len to check the length of a string.

**Week-4:**

   12. Write a function called is_sorted that takes a list as a parameter and returns True if the
   list

is sorted in ascending order and False otherwise.

13. Write a function called has_duplicates that takes a list and returns True if there is any element that appears more than once. It should not modify the original list.

14. Write a function called remove_duplicates that takes a list and returns a new list with only the unique elements from the original. Hint: they don't have to be in the same order.

15. The wordlist I provided, words.txt, doesn't contain single letter words. So you might want to add "I", "a", and the empty string.

16. Write a python code to read a dictionary values from the user. Construct a function to invert its content. i.e., keys should be values and values should be keys.

## Week-5:

17. If there are 23 students in your class, what are the chances that two of you have the same birthday? You can estimate this probability by generating random samples of 23 birthdays and checking for matches.
Hint: you can generate random birthdays with the randint function in the random module.

18. How does a module source code file become a module object?

19. Why might you have to set your PYTHONPATH environment variable?

20. What is a namespace, and what does a module's namespace contain?

21. How do you make a module? Give an example of construction of a module using different geometrical shapes and operations on them as its functions.

22. What is the purpose of a _ _init_ _.py file in a module package directory? Explain with
a suitable example.

23. Use the structure of exception handling all general purpose exceptions.

## Week-6:

24. a. Write a function called draw_rectangle that takes a Canvas and a Rectangle as arguments and draws a representation of the Rectangle on the Canvas.
b. Add an attribute named color to your Rectangle objects and modify draw_rectangle so that it uses the color attribute as the fill color.
c. Write a function called draw_point that takes a Canvas and a Point as arguments and draws a representation of the Point on the Canvas.
d. Define a new class called Circle with appropriate attributes and instantiate a few Circle objects. Write a function called draw_circle that draws circles on the canvas.

25. Write a Python program to demonstrate the usage of MRO in multiple levels of inheritances.

26. Write a python code to read a phone number and email-id from the user and validate it for correctness.

## Week-7:

27. Write a Python code to merge two given file contents into third file.

28. Write a Python code to open a given file and construct a function to check for given words present in it and display on found.

**Week-8:**

29. Import numpy, Plotpy and Scipy and explore their functionalities.
30. Write a GUI program to create a window wizard having two text labels, two text fields and two buttons as Submit and Reset.