**Programming Fundamental** 

**Lab Manual 4**

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**Learning Outcomes:**

* Students should be able to think logically and develop problem-solving skills
* Students should be able to define the need for conditional statements.
* Students should be able to implement the learned concepts of If Statement and If-else Block
* Students should be able to define problem-solving through programming concepts

# Introduction

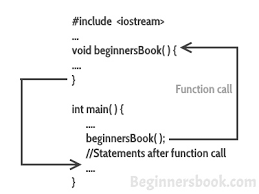
We have studied, that how to write program in main function. Now it’s time to reduce main problem, ease of debugging, reusability of code. For this purpose , we need to divide the source into small chunks which are called function/ procedure/sub program.

Function contain three parts ,(prototype(optional)/calling/ definition. Using Function , we can solve the problem easily by dividing into sub part. There we will study working of function in this manual

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# Function

Take a look back now. The following picture explains the different components of the **Function** .



Recall your memory, you have been taught these concepts earlier in the theory class.

Now, Let’s use the **function** to solve the above-mentioned small problems.

**Example#1:**

You are a shopkeeper, and you want to calculate bill for each customer by using summation, multiplication, subtraction and division. You are requested to make the structure of program that the shopkeeper can use same code for different customer’s bill calculation.

|  |  |
| --- | --- |
| Solution |  |
|  |  |

**Example#2:**

Exchange the value of two variables, write code that main function call your sub program for exchange..

|  |  |
| --- | --- |
| Solution |  |
|  |  |

**Example#3:**

A person is eligible to vote if his/her age is greater than or equal to 18. Define a function to find out if he/she is eligible to vote.

|  |  |
| --- | --- |
| Solution: |  |
|  |  |

**Example #4:**

1. Write a procedure for checking whether the alphabet is in small case or in capital case..

|  |  |
| --- | --- |
| Solution: | The code produces the following output. |
|  |  |

**Question 05:**

**Write a function that check the sign of a number.**

|  |  |
| --- | --- |
| Solution: | The code produces the following output. |
|  |  |

Let’s start with the Challenges.

**Challenge #1:**

Write a function that takes your date of birth in YYYY, MM and DD format (separated by spaces) as input as well as the current date, in same format, and calculates your age in years, months and days. You must check for leap years also. Write a separate function to check for leap year.

**Challenge #2:**

Write a program that takes as input your gross salary and your total saving and uses another function named taxCalculator() to calculate your tax. The taxCalculator() function takes as parameters the gross salary as well as the total savings amount. The tax is calculated as follows:  
(a) The savings is deducted from the gross income to calculate the taxable income. Maximum deduction of savings can be Rs. 100,000, even though the amount can be more than this.  
(b) For up to 100,000 as taxable income the tax is 0 (Slab 0); beyond 100,000 to 200,000 tax is 10% of the difference above 100,000 (Slab 1); beyond 200,000 up to 500,000 the net tax is the tax calculated from Slab 0 and Slab 1 and then 20% of the taxable income exceeding 200,000 (Slab 2); if its more than 500,000, then the tax is tax from Slab 0, Slab 1, Slab 2 and 30% of the amount exceeding 500,000.