Assignment 3

1.A certain grade of steel is graded according to the following conditions:

(i) Hardness must be greater than 50
(ii) Carbon content must be less than 0.7
(iii) Tensile strength must be greater than 5600

The grades are as follows:

Grade is 10 if all three conditions are met
Grade is 9 if conditions (i) and (ii) are met
Grade is 8 if conditions (ii) and (iii) are met
Grade is 7 if conditions (i) and (iii) are met
Grade is 6 if only one condition is met
Grade is 5 if none of the conditions are met

Write a program, which will require the user to give values of hardness, carbon content and tensile strength of the steel under consideration and output the grade of the steel.

2. In a company, worker efficiency is determined on the basis of the time required for a worker to complete a particular job. If the time taken by the worker is between 2 – 3 hours, then the worker is said to be highly efficient. If the time required by the worker is between 3 – 4 hours, then the worker is ordered to improve speed. If the time taken is between 4 – 5 hours, the worker is given training to improve his speed, and if the time taken by the worker is more than 5 hours, then the worker has to leave the company. If the time taken by the worker is input through the keyboard, find the efficiency of the worker.

3. A university has the following rules for a student to qualify for a degree with A as the main subject and B as the subsidiary subject:
(a) He should get 55 percent or more in A and 45 percent or more in B.
(b) If he gets than 55 percent in A he should get 55 percent or more in B. However, he should get at least 45 percent in A.
(c) If he gets less than 45 percent in B and 65 percent or more in A he is allowed to reappear in an examination in B to qualify.
(d) In all other cases he is declared to have failed.

Write a program to receive marks in A and B and Output whether the student has passed, failed or is allowed to reappear in B.

4. The policy followed by a company to process customer orders is given by the following rules:

(a) If a customer order is less than or equal to that in stock and has credit is OK, supply has requirement.
(b) If has credit is not OK do not supply. Send him intimation.
(c) If has credit is Ok but the item in stock is less than has order, supply what is in stock. Intimate to him data the balance will be shipped.
Write a C program to implement the company policy.
5. Write a program to enter the numbers till the user wants and at the end it should display the count of positive, negative and zeros entered.

6. Write a function that receives 5 integers and returns the sum, average and standard deviation of these numbers. Call this function from **main python program** and print the results in **main python program**.

7. Write a function that receives marks received by a student in 3 subjects and returns the average and percentage of these marks. Call this function from **main python program** and print the results in main **python program.**

8. A positive integer is entered through the keyboard, write a function to find the binary equivalent of this number.

9. Write a function to compute the distance between two points and use it to develop another function that will compute the area of the triangle whose vertices are **A(x1, y1)**, **B(x2, y2)**, and **C(x3, y3)**. Use these functions to develop a function which returns a value 1 if the point **(x, y)** lines inside the triangle ABC, otherwise a value 0.

10. Write a program to calculate overtime pay of 10 employees. Overtime is paid at the rate of Rs. 12.00 per hour for every hour worked above 40 hours. Assume that employees do not work for fractional part of an hour.