**Introduction to Python**

**Assignment 2**

Write Python Program for the following (include necessary exception handling wherever required):

1. Prompt the user for a score between 0.0 and 1.0. If the score is out of range, print an error message. If the score is between 0.0 and 1.0, print a grade using the following table:

|  |  |
| --- | --- |
| Score | Grade |
| >= 0.9 | A |
| >= 0.8 | B |
| >= 0.7 | C |
| >= 0.6 | D |
| < 0.6 | E |

1. If cost price and selling price of an item is input through the keyboard, write a program to determine whether the seller has made profit or incurred loss. Also determine how much profit he made or loss he incurred.
2. Any year is input through the keyboard. Write a program to determine whether the year is a leap year or not.
3. A five-digit number is entered through the keyboard. Write a program to obtain the reversed number and to determine whether the original and reversed numbers are equal or not.
4. If the ages of Ram, Shyam and Ajay are input through the keyboard, write a program to determine the youngest of the three.
5. Write a program to check whether a triangle is valid or not, when the three angles of the triangle are entered through the keyboard. A triangle is valid if the sum of all the three angles is equal to 180 degrees.
6. Find the absolute value of a number entered through the keyboard.
7. Given three points (x1, y1), (x2, y2) and (x3, y3), write a program to check if all the three points fall on one straight line.
8. Given a point (x, y), write a program to find out if it lies on the x-axis, y-axis or at the origin, viz. (0, 0).
9. An Insurance company follows following rules to calculate premium.
   1. If a person’s health is excellent and the person is between 25 and 35 years of age and lives in a city and is a male then the premium is Rs. 4 per thousand and his policy amount cannot exceed Rs. 2 lakhs.
   2. If a person satisfies all the above conditions except that the sex is female then the premium is Rs. 3 per thousand and her policy amount cannot exceed Rs. 1 lakh.
   3. If a person’s health is poor and the person is between 25 and 35 years of age and lives in a village and is a male

Write a program to output whether the person should be insured or not, his/her premium rate and maximum amount for which he/she can be insured.

1. A certain grade of steel is graded according to the following conditions:
   1. (i) Hardness must be greater than 50
   2. (ii) Carbon content must be less than 0.7
   3. (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.

1. A library charges a fine for every book returned late. For first 5 days the fine is 50 paise, for 6-10 days fine is one rupee and above 10 days fine is 5 rupees. If you return the book after 30 days your membership will be cancelled. Write a program to accept the number of days the member is late to return the book and display the fine or the appropriate message.
2. The policy followed by a company to process customer orders is given by the following rules:
   1. If a customer order is less than or equal to that in stock and has credit is OK, supply has requirement.
   2. If has credit is not OK do not supply. Send him intimation.
   3. 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 program to implement the company policy.

1. 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.
2. 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:
   1. He should get 55 percent or more in A and 45 percent or more in B.
   2. 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.
   3. 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.
   4. 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.