**EASY PROBLEM STATEMENTS**

1. In the Hangman game , peter wants a user to enter a letter .on the basis of the user’s input, he wants to check whether the letter is present in the word or not. For this , he decides to compare the letter entered by the user with each letter of the corresponding word . If the letter is present in the word , it should display an appropriate message. In addition, he wants the menu to be displayed till the user wants to guess a letter. Help peter to achieve the preceding requirement.
2. There is company named Isac, sam is assigned with a work to arrange the clients names as their first character to be capital and rest of them to be small, and also split the name to first name , middle name and last name like the bellow example:

EX: suManTh ReDdy PaThi =>first name = “Sumanth” middle name = “Reddy” last name = “Pathi”

1. In the Employee Book application, Davis wants to display the following menu when the application starts:

1.Enter Data

2.Display Data

3.Exit

Thereafter , he wants a user to enter a choice, such as 1, 2, or 3. Based on the input provided by the user, he wants the respective methods, enterData(), displayData() or exitMenu() to be invoked according to the user’s input ,1,2, or 3 respectively. Help David to achieve the preceding requirement.

1. Write a program to identify whether a character entered by the user is vowel or a consonant.
2. Write a program whether the entered number is a prime palindrome or not. Example, 11 is a prime as well as palindrome. So, the input given is a prime palindrome.
3. Write a program to transform the given matrix to its transpose.
4. Write a program to print the multiplication table upto 10 of a given input.
5. Write program to print the positions of vowels and consonants of a given string.
6. Write a program to check whether the given sides are of triangle are right-angled or not. If true print the area of the triangle.
7. Write a program to transform a matrix such that the resultant matrix’s elements are replaced with their factorials.

**HARD PROBLEM STATEMENTS**

1. For any set A of numbers, let SUM(A) be the sum of the elements of A. Consider a subset of n elements as SUM(SUB(A,n)). Now find the sum of all subsets N. Write a program which takes input values of set A and n value.

Consider the set A={1,3,5} with n value 2

{1,3} = 4

{1,5} = 6

{3,5} = 8

then the sum of subsets is 4+6+8 = 18.

1. Let us consider a triangle with coordinates (x1 ,y1), (x2 ,y2), (x3 ,y3) now find the area of the triangle. The condition is that the triangle should be right-angled triangle otherwise it returns an error message “the given coordinates are not right-angled triangle coordinates”.

Consider the coordinates (0,0), (0,3), (4,0)

The answer for the above problem statement is 6.

1. Maria plays college basketball and wants to go pro. Each season she maintains a record of her play. She tabulates the number of times she breaks her season record for most points and least points in a game. Points scored in the first game establish her record for the season, and she begins counting from there.

For example, assume her scores for the season are represented in the array scores=[12,24,10,24,32]. Scores are in the same order as the games played. She would tabulate her results as follows:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Games | Score | Highest | Lowest | Most points records | Least point records |
| 0 | 12 | 12 | 12 | 0 | 0 |
| 1 | 24 | 24 | 12 | 1 | 0 |
| 2 | 10 | 24 | 10 | 1 | 1 |
| 3 | 24 | 24 | 10 | 1 | 1 |
| 4 | 32 | 32 | 10 | 2 | 1 |

So finally maria breaks 2 most points records and 1 least points records.

Write a program for above problem statement.

1. Given an array of integers, find and print the maximum number of integers you can select from the array such that the absolute difference between any two of the chosen integers is less than or equal to 1.

For example, if your array is a = {1,1,2,2,4,4,4,5,5}, you can create two subarrays meeting the criterion: {1,1,2,2}and {4,4,4,5,5}. The maximum length subarray has 5 elements.

Write a program for above Problem Statement.

1. Emma is playing a new mobile game that starts with consecutively numbered clouds. Some of the clouds are thunderheads and others are cumulus. She can jump on any cumulus cloud having a number that is equal to the number of the current cloud plus 1or 2. She must avoid the thunderheads. Determine the minimum number of jumps it will take Emma to jump from her starting postion to the last cloud. It is always possible to win the game.

For each game, Emma will get an array of clouds numbered 0 if they are safe or 1 if they must be avoided. For example,[0,0,1,0,0,1,0] indexed from 0 to 7. The number on each cloud is 1 its index in the list so she must avoid the clouds at indexes and she could land on 0 freely. She could follow the following path: [1,2,1,2]. The path takes 4 jumps .

Write a program to calculate minimum number of jumps?

6. Develop an application where the user gives the equations y =(m1)x + c1 and y = (m2)x + c2 of a given lines L1 ,L2 and gets the point of intersection of the two lines i.e (xp,yp).

7. Develop an application to play TIC-TAC-TOE game. Game consists of two players with labels 1 and 0, input from them one by one. The input consists two number which are indices of the row and column of a matrix.

8. There is a n\*n matrix where we need to count no of rows which are sorted (whether in ascending or descending order) . Develop an application to satisfy the above conditions.

9. Develop an application where it displays the repeted vowels of a given input string. Example, consider a string “hello world” it should display “o is repeted”, another example “hi george how you doing” it should display “e,o,i are repeted”.

10. Develop an application where it prints the highest possible number of n digits by rotating it .Example, consider a number 156389 , the highest possible number is 915638.