**Array**

Write pseudo-code of program that creates char array of 5 elements of type char. The array contains 5 vowels a, e, i, o, u. Ask the user to enter characters of their choice until the user enters a vowel. After user enters a vowel the program should stop taking inputs. And display all the entered characters by user. To check either a character entered is vowel or not your program should check the entered characters from the array on each input. For example user enter q, d, f, a. The output should be q, d, f.

Write a C++ program that asks the user to enter 10 integer values in an array. After entering 10 elements find the maximum number and display it on output screen.

Write a C++ program that takes five alphabets from the user and ask the user to delete any alphabet. You should store the alphabets in a char array.

Write a C++ program that reads marks of a class (having 5 students) from the user and places them in an array of type float. After that, it should compute average marks obtained by the class. In the end, display student number and their marks for all those students who got marks above average.

Write a C++ program that creates two one dimensional arrays “A” and “B” of size 20 elements each. The main program should get the input in the array “A” from the user and initialize array “B” with values “0”. Your program should calculate the (number -2) of each element of array “A” and should store in the square value in corresponding positions (index) in the array “B”. In the end, the main program (main function) prints the calculated values of array “B”. Also display the values in array B which are Odd (if any).

Write a C++ program that creates an array “A” having 5 elements (in the main function). Then, the program asks the user to enter values in this array. After that, the program should replace each array element which is divisible by 3 with new value (by adding 1 to it). In the end, the main program (“main”) shows the updated array elements in ascending order.

Write a C++ program that creates an array “A” having 5 elements (in the main function). Then, the program asks the user to enter values in this array. After that, the program should ask question from user are you wanted to sort ascending or descending order kindly enter your choice that’s you want to search in the array, also compute the sum of array for the ascending order and difference of array for the descending order.

: Write pseudo-code of a program that calculates the sum of odd numbers of a matrix.First, create a 2D array having 5 rows and 5 columns. After that, the program should sum all those numbers in the matrix which are odd.In the end, print the calculated sum.

Write a C++ program which calculates sum of each column and row separately. For this, first create a 2D array (3 rows, 5 columns) and then ask the user to input values in the array. After that, first calculate sum of each row separately and display that sum. Then, calculate sum of each column separately and display that sum on the screen. To achieve such output, you need to follow the following instructions.

Write a C++ program that displays the row numbers of a matrix containing at least two even numbers. First, the program should create a 2D array (5 rows, 5 columns). Then, ask the user to input values in the matrix or 2D array. After that, program should display row number (or index) which have less than 2 prime numbers. If no row (of the matrix) contains at least two prime numbers then the program should display the message “No row found containing two prime numbers”.

**functions**

Write a pseudo-code in which two functions are called from the main() function. One function receives parameters from the main () function as by-value (pass-by-value) while the other function receives the values from the main() function as reference. You need to print the values sent from the main() function after calling each function and see the difference.

Write a function int reverse(int n) which reverse the digits in its parameter and return the results. For example, if n is 927, then it would be 729. Apply the function in a program that asks the user to enter the 10 numbers and reverse them.

Write a function that would calculate an item’s sale price based on the item’s purchase price plus the tax. The function prototype is double Sale\_Price (double, double). The first parameter is the purchase price and the second parameter is the tax. The function will return the sale price of the product. its formula is:

After setting up the project, you are ready to write the code and execute it. In this task we will try to swap two numbers using pass-by value and pass-by reference swap functions. The main function creates two variables of int type and assigns the values 10 and 20. Then swap functions are called and variables are passed by value and by reference. Please note the difference in both cases.

Write a function that would calculate an item’s sale price based on the item’s purchase price plus the tax. The function prototype is double Sale\_Price (double, double). The first parameter is the purchase price and the second parameter is the tax. The function will return the sale price of the product. its formula is:

Write the definition of a void function that takes as input two decimal numbers. If the first number is nonzero, it outputs the second number divided by the first number; otherwise, it outputs a message indicating that the second number cannot be divided by the first number because the first number is 0.

Write a function to print the diamond of size n. n will be taken input from user and pass as an argument in function by reference.

Write a program that implements isVowel that returns the value true if a given character is a vowel and otherwise returns false. Mention proper function declaration/prototype, and function call from 156 the main body

Write pseudo-code of a program that creates an integer array of 30 elements. After that, the program should pass this array (using reference pointer) to the function called “Find\_Selective\_Sum”. The function “Find\_Selective\_Sum” should input two values (P and Q) from the user. After that, function “Find\_Selective\_Sum” should calculate sum of all those elements which are between P and Q. In the end, the calculated sum is returned to the main program.

Write a C++ functions bool isPalindrome(char arr[],int size) which take character array and check whether array is palindrome or not. Palindrome is a word, phrase, or sequence that reads the same backwards as forwards. Example madam, racecar etc..

Write a C++ program that creates (in main function) an array of type float having 10 elements (for 10 students). After that, pass that array to the function named “inputValues” which takes input in that array. For passing array, you should use reference pointers. After that, create another function named “findAverage” and pass that array (using reference pointer) to that function. The “findAverage” function should calculate the average of the marks of the 10students and update or report the average using a reference variable (Note: Do not use return) to the main function.

a) Write a C++ program that creates an integer array having 30 elements. Then, implement 6 functions as shown below:

i. First, call the function “readArray( int p[] )” by passing the array from the main program. The “readArray( )” function should get input from the user for each array element.

ii. Next, call the function “findEvenSum( int p[] )” and pass the array from the main( ) function. The “findEvenSum( )” function should calculate the sum of even values stored in the array and then print the sum on the screen.

b) Then, from the main( ) call the function “searchThirdSmallest( int p[] )” function by passing the array. The “searchThirdSmallest( int p[] )” function should find the third smallest value in the array and should return that value or number to the main( ) program. c) After that, the main( ) should call the function “findGreater( intp[] )” by passing the array. The function “findGreater( int p[] )” should first get an integer value M from the user. Then, it should find and print all of those numbers which are greater than M (integer value entered by the user).

d) Then, the main( ) should call the function “reverseValues( int p[] )” by passing that array. The function should reverse array values, i.

e., value at index 9 should be placed at index 0, value at index 8 should be moved to index 1 and so on. e) In the end, the main( ) should call the function “displayAboveAvarage( int p[] )” by passing that array. The function should first find the average of array values and then display only those elements which are greater than average.

Write a C++ program that creates and integer array having 30 elements. Get input in this array (in main function). After that, pass that array to a function called “Find\_Max\_Divisors” using reference pointer. The function “Find\_Max\_Divisors” should find (and return) in the array that number which has highest number of divisors. In the end, the main function displays that number having highest number of divisors.

**Pointers:**

Write pseudo-code of a program that sorts (ascending) an integer array of size 20. First, create an integer array having 20 elements. Then, create an integer pointer that points to that array. After that, get input values from the user in that array and sort it (ascending). Please note: All array accesses must be done using pointer notation.

Write a C++ program that swaps values of two float type variables A and B. For swapping you can use third variable temp to store values temporary. All accesses to the variables (A, B, and temp) should be made through pointer notation only. In the end, print the values of variables (A, B) on the screen. Please also note that during input (cin) and output (cout) the variables must be accessed through pointers only.

Write a C++ program that creates an integer array of a month and get the size of this array from the user. The program should take input values (temperatures for all days of the month) from the user. The program should display lowest temperature, highest temperature, and average temperature for the month.

Write a C++ program called “Eliminate evens”. First, create an array named “values” having 10 elements of integer type. Then, the program should ask the user to enter values (which may be negative as well as positive) in this array. After that, the program replaces each array element which is odd with an even value. Positive odds should be replaced by even values by adding 1 to them while the negative odd values must be replaced by adding -1 to them. In the end, the program shows the updated array.

Write a C++ program that creates two double-type one dimensional arrays Radius and Area of size 10 elements each. In array Radius, get 10 input values (radius of 10 circles). The program should calculate the area of circles for 10 inputted radius values, and store in the corresponding positions in array Area. In the end, program should display 10 calculated areas for the circles.

**Structures:**

Write pseudo-code of a program that collects information about students of a class. Arrange this information in the form of array of structures. The array should be of size 30 to store information for the entire class. For each student, you should store information such as: name, registration number, age, CGPA, and address. Get input from the user for all the 30 students. In the end, print names of only those students whose CGPA is above 3

Write a program that stores information about laptops in a computer shop. The program stores the records of 100 laptops. For each laptop, it stores information such as its model, it’s price, and its memory size. The “Laptop” structure definition is given below. The program should take input for all the 100 laptops in the shop. In the end, the program should display the information of all those laptops which has price above 60000.

Write a C++ program for the pseudo-code problem mentioned in section 5.1.1. Modify this problem such that it should print the names of only those students whose CGPA is above average. Hint: For this, first you have to find the average CGPA of the class.

Write a program that maintains the record for 15 books of a student. In each record (for a single book), it should store book id, book title, author and its price. The program should take input for all the 10 books and store the data in array of structure. In the end, the program should display (after reading from the file) titles of only those books whose authors are sam

Write a program that reads student’s name followed by their numerical scores. The program should output the numerical score and the relevant grade. It should also find and print the highest score and the name of the students having the highest score. Student data should be stored in a struct variable of type studentType, which has four compnents: studentFName and studentLName of type string, testScore of type int(b/w 0 and 100) and grade of type char. Suppose that the class has 20 students. Use an array of 20 components of type studentType. Your program must contain at least the following functions:

• A function to read the students data into the array.

• A function to the relevant Grade to each student (use your own judgment to assign grades A, C, D, or F based upon the students’ scores).

• A function find the highest score.

• A function to print the names of the students having the highest score