WEEK-1	ARRAYS AND STRINGS (LAB A AND B)

1) Conversion between number systems.

(a) Write a program for converting a given integer in decimal number system to its binary equivalent. You should use a function that access values of an array using pointers for reversal and pointer as an argument.

(b) Add another function to the above question to convert the integer to its octal number system.

(c) Add an additional function to convert the integer to its hexadecimal number system.

(d) Modify all the above functions to convert a number having integer as well as decimal part to its respective number system.

(e) Make a menu driven program to include all above conversions. Further extend themto have their complementary functions too, i.e., decimal to binary & binary to decimal; decimal to octal & octal to decimal; decimal to hexadecimal & hexadecimal to decimal;

(f) Extend the program to have an option for conversion from decimal to any othernumber system.

(2) Manipulation with arrays and strings, structures.

(i) Student Dataset
(a) Take input from user for "n" number of students. Store their names, enrolment numbers and marks for 5 different subjects. ("n" is a variable whose value is to be input at runtime).

(b) Sort alphabetically on key value name and display accordingly.

(c) Sort enrolment number wise and display accordingly.

(d) Sort marks wise for individual subjects and display accordingly.

(e) Make a menu-driven program for inclusion of all the above tasks from (i)(a) to (i)(d).

(ii) Take string as an input and convert it to its "Piglatin" form. Make a function fordepicting the rule and using it on the input given by the user.Eg:

Input	Output
Lame	Amelay
Happy	Appyhay
Child	Ildchay
Pig	Igpay
Hair	Airhay
code	odecay

(3). An array arr[0..n-1] is given. Implement an efficient algorithm to arrange the elementsof the array in such a way thatarr[0] >= arr[1] <= arr[2] >= arr[3] <= arr[4] >= …..and so on.We can call it a wave like array. Can we do it O(n)?

(4). You are given an array [a[1] to a[n]] and we have to construct another array [b[1] to b[n]] where b[i] = a[1]*a[2]*…*a[n]/a[i]. You are allowed to use only constant space and the time complexity is O(n).

No divisions are allowed. Implement the solution of this problem.