**PF Lecture 11: Pointers /address of operator (&)/ dereference operator (\*)**

**Arrays / Dynamic Memory /Functions**

**Question 1:** Write a function in C++ that receives an empty integer array of size 5 in an integer pointer , the function will initialize all the elements of that array from user.

**Use this Function Prototype: void initialize\_array (int \*arr, int size);**

**Using this function call, if numbers is an array of size 5:**

**initialize\_array ( numbers, size);**

**Question 2:** Write a function in C++ that receives only an int-reference size as a parameter. The function task is to initialize the size from user and create an array of that size using dynamic memory allocation. The function should return the array after initializing array.

**Use this Function Prototype: int\* create\_initialize\_array (int &size);**

**Using this function call, if size is an integer variable initialized with 0 in main.**

**int \*arr=create\_initialize\_array (size);**

**Question 3:** Write a function in C++ that receives an integer pointer dynamically created in main of size entered by user. The task of the function is to initialize that array upto the size entered.

**Use this Function Prototype: void initialize\_array (int \* arr,int size);**

**Using this function call, if numbers is an integer pointer used to create array dynamically in main and size is an integer variable representing size of array numbers , initialized from user in main.**

**create\_initialize\_array (numbers, size);**

**Question 4:** Write a function in C++ that receives a dynamically created integer array and an integer size, as well as a value to search in that array.

**Use this Function Prototype: int search\_array (int \* arr,int size, int value);**

**Using this function call, if numbers is an integer pointer used to create array dynamically in main and size is an integer variable representing size of array numbers, and val is a value to be search, initialized from user in main. The function should return the index where it found the value else return -1 if not found.**

**Int search\_array(numbers, size, val);**

**Question 5:** Write a function in C++ that receives a dynamically created integer array and an integer size and that will shift whole array one step to the left. (Obviously on shifting left it will lose the first value of that array)

**Use this Function Prototype: void shift\_left (int \* arr,int size);**

**Using this function call, if numbers is an integer pointer used to create array dynamically in main and size is an integer variable representing size of array numbers, initialized from user in main.**

**void shift\_left(numbers, size);**

**Question 6:** Write a function in C++ that receives a dynamically created integer array , an integer size ,that will shift whole array one step to the left , and continue this process till only one element left in that array. (Obviously on shifting left it will lose the first value of that array on each shift)

**Use this Function Prototype: void shift\_left (int \* arr,int size);**

**Using this function call, if numbers is an integer pointer used to create array dynamically in main and size is an integer variable representing size of array numbers, initialized from user in main.**

**void shift\_left(numbers, size);**

**Question 7:** Write a function in C++ that receives a dynamically created integer array and an integer size, and an index from where the left shift start instead of from the first location as in above questions. The function will shift whole array one step to the left from that index. (Obviously on shifting left it will lose the value of that array of that index)

**Use this Function Prototype: void shift\_left\_index (int \* arr,int size,int index);**

**Using this function call, if numbers is an integer pointer used to create array dynamically in main , size is an integer variable representing size of array numbers and a valid index ind from where the left shift should start, all initialized from user in main.**

**void shift\_left(numbers, size, ind);**