

Homework Assignment 7

Part A (15%)

1. Explain all the different usages of the operator * in C.
2. What does the code output (assume we can compile it with no errors) ?

```
letterPointer = &userLetter;  
userLetter = 'A';  
*letterPointer = 'C';  
printf("%c", userLetter);
```

- A. A
- B. B
- C. C

Part B (85%) Programming Exercises:

1. (15%) Write a program in C to demonstrate the use of &(address of) and *(value at address) operator.
 - a. The expected output:

```
Pointer: Demonstrate the use of & and * operator :
```

```
-----  
m = 100  
fx = 200.600006  
cht = z
```

```
Using & operator:
```

```
-----  
address of m = 0x7ffee6c49568  
address of fx = 0x7ffee6c49564  
address of cht = 0x7ffee6c49563
```

```
Using & and * operator:
```

```
-----  
value at address of m = 100  
value at address of fx = 200.600006
```

```
value at address of cht = z
```

```
Using only pointer variable:
```

```
-----
address of m = 0x7ffee6c49568
address of fx = 0x7ffee6c49564
address of cht = 0x7ffee6c49563
```

```
Using only pointer operator:
```

```
-----
value at address of m = 100
value at address of fx= 200.600006
value at address of cht= z
```

- b. Note that the address highlighted by yellow color can be different for your program.

2. (20%) Write a program in C to store n elements in an array and print the elements *using pointer*.

- a. The expected output:

```
Input the number of elements to store in the array: 4
Input 4 number of elements in the array:
element - 0: 5
element - 1: 7
element - 2: 2
element - 3: 9

The elements you entered are:
element - 0: 5
element - 1: 7
element - 2: 2
element - 3: 9
```

- b. For example, you have created the **myArr** to store the numbers, and use the below code to print the array element.

```
printf("The elements you entered are : \n");  
for(int i=0;i<n;i++)  
{  
    printf("element - %d : %d \n", i, *(myArr+i));  
}
```

3. (20%) Write a program in C to compute the sum of all elements in an array *using pointers*.

a. The expected output:

```
Input the number of elements to store in the array (max 10): 4  
Input 4 number of elements in the array:  
element - 1: 1  
element - 2: 2  
element - 3: 3  
element - 4: 4  
  
The sum of array is: 10
```

- b. For example, you have created a pointer **pt** point to the first element in your array, and use the below code to print the array element.

```
for (int i = 0; i < n; i++) {  
    sum = sum + *pt;  
    pt++;  
}
```