Data Structure assignment

Q1. Ans-

```
#include <stdio.h>
    int main()
    {
      int n, i, val, pos;
      int arr[100];
      printf("ENTER THE SIZE OF AN ARRAY :\n");
      scanf("%d", &n);

      printf("ENTER %d ARRAY ELEMENT");
       for(i=0; i<n; i++)
        {
            scanf("%d", &arr[i]);
        }
      printf("ENTER THE ELEMENT TO BE INSERTED AN POSITION:");
      scanf("%d %d", &val, &pos);

      n++;
      for(i=n-1; i>=pos; i--)
      {
          arr[i] = arr[i-1];
      }
      arr[pos-1] = val;
      printf("ARRAY AFTER INSERTION :");

      for(i=0; i<n; i++)
      {
          printf("%d ", arr[i]);
      }
      return 0;
    }
```

Q2. Ans -

```
#include <stdio.h>
int main()
{
    int n, i;
    printf("Enter size of an array : n");
    scanf("%d", &n);
    int a[n];
    printf("Enter array elements : n");

    for(i=0; i<=n; i++)
    {
        scanf("%d", &a[i]);
    }
    int k;
    printf("Enter position where to delete Element : ");
    scanf("%d", &k);

    for(i=k; i<=n; i++)
    {
        a[i] = a[i+1];
    }

    for(i=1; i<=n-1; i++)
    {
        printf("%d", a[i]);
    }
    return 0;
}
```

Q3. Static memory allocation:- It is a technique of allocating a fixed ammount of memory during compile time.

- For example :- array use a static memory allocation.

Q4 Dynamic memory allocation:- It is a technique of allocating memory in which coe can increase or decrease memory according to our requirement dynamically with the help of mallo(), calloc() etc.

Q5. There are four types of dynamic memory allocation:
(i) Mallo(), (ii) callo(), (iii) realloc(), (iv) free().

Q6. mallo():- It reserves a block of memory of the specific number of bytes. And it returns a pointer of void which can be casted into pointers of any form.

Syntax → ptr => (casttype*) mallo(size);

Q7. callo():- It is same as mallo but as ~~mallo~~ calloc does not ~~Keep numbers~~ uninitialized and return NULL makes it differ from mallo.

Q8 free(): To free up the memory created by mallo or callo, free() is used to release the space.

Q9. realloc():- It is used to re allocated the memory if it is insufficient or more required, it change the size of previously allocated memory.

Malloc()	Calloc
(1) It returns garbage value when not being allocated	When the memory is not being allocated then it returns Null rather garbage value
(1) Syntax → (casttype*)malloc(size)	Syntax → (casttype*) calloc(n, size);