Tue/27/10/2020

//Pointer Assignments

```
#include <stdio.h>
int main(void)
{
  int x = 99;
  int *p1, *p2;
  p1 = &x;
  p2 = p1;

  /* print the value of x twice */
  printf("Values at p1 and p2: %d %d\n", *p1, *p2);

  /* print the address of x twice */
  printf("Addresses pointed to by p1 and p2: %p %p", p1, p2);
  return 0;
}
```

//Dynamic Memory Allocation

Functions are: Calloc() | Malloc()| realloc() | free()

malloc()	Allocates single block of requested memory.
calloc()	Allocates multiple block of requested memory.
realloc()	Reallocates the memory occupied by malloc() or calloc() functions.
free()	Frees the dynamically allocated memory.

```
// Program to calculate the sum of n numbers entered by the user
//Example 1: malloc() and free()

    #include <stdio.h>
    #include <stdlib.h>

    int main()
    {
       int n, i, *ptr, sum = 0;

       printf("Enter number of elements: ");
       scanf("%d", &n);

       ptr = (int*) malloc(n * sizeof(int));

       // if memory cannot be allocated
       if(ptr == NULL)
       {
          printf("Error! memory not allocated.");
          exit(0);
       }

       printf("Enter elements: ");
       for(i = 0; i < n; ++i)
       {
          scanf("%d", ptr + i);
          sum += *(ptr + i);
       }

       printf("Sum = %d", sum);

       // deallocating the extra allocated memory
       free(ptr);

       return 0;
    }
```

```
// Program to calculate the sum of n numbers entered by the user
//Example 2: calloc() and free()

#include <stdio.h>
#include <stdlib.h>

int main()
{
   int n, i, *ptr, sum = 0;
   printf("Enter number of elements: ");
   scanf("%d", &n);

   ptr = (int*) calloc(n, sizeof(int));
   if(ptr == NULL)
   {
      printf("Error! memory not allocated.");
      exit(0);
   }

   printf("Enter elements: ");
   for(i = 0; i < n; ++i)
   {
      scanf("%d", ptr + i);
      sum += *(ptr + i);
   }

   printf("Sum = %d", sum);
   free(ptr);
   return 0;
}
```