Define the concept of pointer. Also define the dynamic memory allocation and various functions for dynamic memory allocation, with suitable example?

Ans → Pointer:- Pointer is variable which contains address of the another variable

Declaration → The declaration of a pointer variable takes the following

Datatype * pointer name

This tells the compiler three things about the variable pointer name

This asterisk (*) tells that the variable pointer name is a pointer variable

(2). Pointer name needs a memory location.

(3). Pointer name points to a variable of data type.

Ex-

int *p → This is a /* integer pointer

Initialization of pointer variables

(1). Initialization is a process of assigining the address of a variable to a pointer variable.

(2). Once a pointer variable has been declared we can use the assignment operator

Ex-

```
int total;
int *p;      /* declaration */
p = &total;  /* Initialization */
```

Dynamic memory allocation:-

(1) Dynamic memory allocation refers to allocating the memory to the variable at run time.

(2). So that the file of variable can is change at run time according to our need.

(3). It uses four function from <stdio lib.h> header file.

(1). Malloc (): Memory allocation

(1) The malloc () function is used to allocate

(a) heap storage.

(2) It returns a pointer of type void

Syntax → ptr = (data type*) malloc (byte-size)

(2) Calloc () contiguous allocation

(a). it reverse no of block in memory

(2) It returns a pointer of type void.

Syntax → ptr = (datatype*) calloc (n element size)

(3). realloc ()

(1) It is used for changing the size of privately allocated memory.

Syntax: realloc (ptr, new size)

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④ free():

① It is used for releasing the space allocated by dynamic memory allocation

Syntax: free(ptr);