Polytechnic University of Yucatan

"Investigation"

Student Name:

- Christian Isaac Dzul Canul

Teacher's name: Luis Gerardo Cámara Salinas

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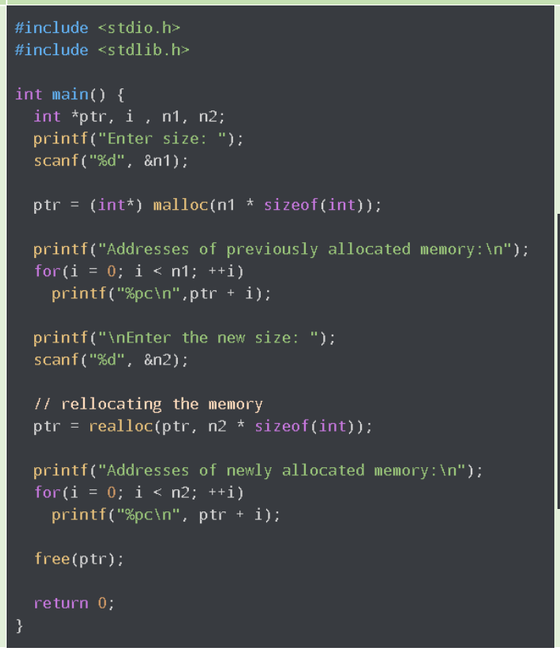
Investigation

In C language programming exits different functions that are helpful to achieve different tasks. As we have already seen, there are functions that are used to facilitate dynamic memory allocation in C programming. Some of these are:

Functions	Definition	Syntax	Example
Malloc ( )	-Also known as memory allocation, it is a method in C that is used to dynamically allocate a single large block of memory with a specified size. -It returns a pointer of type void which can be cast into a pointer of any form. It initializes each block with default garbage value.	ptr = (cast-type*) malloc(byte-size);	`ptr = (float*) malloc(100 * sizeof(float));`
Realloc ( )	-It is used to change the memory allocation of a previously allocated memory. If the memory that was previously allocated with help of malloc or calloc is not enough, realloc is used to re-allocate memory (it helps to maintain the value).	ptr = realloc(ptr, newSize);	

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

int main() {
  int *ptr, i , n1, n2;
  printf("Enter size: ");
  scanf("%d", &n1);

  ptr = (int*) malloc(n1 * sizeof(int));

  printf("Addresses of previously allocated memory:\n");
  for(i = 0; i < n1; ++i)
    printf("%pc\n",ptr + i);

  printf("\nEnter the new size: ");
  scanf("%d", &n2);

  // rellocating the memory
  ptr = realloc(ptr, n2 * sizeof(int));

  printf("Addresses of newly allocated memory:\n");
  for(i = 0; i < n2; ++i)
    printf("%pc\n", ptr + i);

  free(ptr);

  return 0;
}
```

```
Enter size: 2
Addresses of previously allocated memory:
26855472
26855476

Enter the new size: 4
Addresses of newly allocated memory:
26855472
26855476
26855480
26855484
```

Calloc ( )	-Also known contiguous allocation is a method in C is used to dynamically allocate the specified number of blocks of memory of the specified type. It initializes each block with a default value ‘0’.	ptr = (cast-type*) calloc (n, element-size);	
Free ( )	-It is method in C is used to dynamically de-allocate the memory. As we know if we use functions like malloc () and calloc () is not de-allocated on their own. -So, free () method is used, whenever the dynamic memory allocation takes place. It helps to reduce wastage of memory by freeing it.	free(ptr);