C Programming Notes: Unit 5 - Pointers

Contents

1 Pointers

Pointers are variables that store memory addresses.

1.1 Pointer Basics

```
int a = 10;
int *p = &a;
```

1.2 Pointer Arithmetic

```
int array[5] = {1, 2, 3, 4, 5};
int *p = array;
for (int i = 0; i < 5; i++) {
    printf("%d ", *(p + i));
}
```

1.3 Dynamic Memory Allocation

Functions like `malloc`, `calloc`, and `free` manage dynamic memory.

```
int *p = (int *)malloc(5 * sizeof(int));
if (p == NULL) { /* handle memory allocation failure */ }
free(p);
```

1.4 Pointers to Pointers

Double pointers point to other pointers.

```
int a = 10;
int *p = &a;
int **pp = &p;
```