1.
```
#include <stdio.h>
int main() {
   int arr[5] = {1, 2, 3, 4, 5};
   int a = arr[5];
   printf("The value of a is %d\n", a);
   int b = *(arr + 3);
   printf("The value of b is %d\n", b);
   int c[3] = {1, 2};
   printf("The value of c[2] is %d\n", c[2]);
   int d[5] = {1, 2, 3, 4, 5};
   int e[5] = d;
   printf("The value of e[0] is %d\n", e[0]);
   return 0;
}
```

2.
```
// Function to calculate the factorial of a number
int factorial(int n) {
   if (n == 0) {
      return 1;
   }
   return n * factorial(n - 1);
}
int main() {
   int n = 5;
   int result = factorial(n);
   printf("The factorial of %d is %d\n", n, result);

   int m = 15;
   int result2 = factorial(m);
   printf("The factorial of %d is %d\n", m, result2);
   return 0;
}
```

3.
```
#include <stdio.h>

void printArray(int arr[])
{
   int i;
   int arr_size = sizeof(arr)/sizeof(arr[0]);
   for (i = 0; i < arr_size; i++) {
      printf("%d ", arr[i]);
   }
}
int main()
{
   int arr[4] = { 1, 2, 3, 4 };
   printArray(arr);
```

```
    return 0;
}
```

3.

```
int main() {
    int x = 5;
    int *ptr1 = &x;
    printf("The value of x is %d\n", *ptr1);
    int y = 7;
    int *ptr2 = &x;
    *ptr2 = y;
    printf("The value of x is now %d\n", x);
    int *ptr3 = NULL;
    int z = *ptr3;
    printf("The value of z is %d\n", z);
    int *ptr4;
    int a = *ptr4;
    printf("The value of a is %d\n", a);
    int arr[5] = {1, 2, 3, 4, 5};
    int *ptr5 = &arr[2];
    int b = *(ptr5 + 6);
    printf("The value of b is %d\n", b);
    return 0;
}
```

4.

```
int main() {

    FILE *fp;
    fp = fopen("example.txt", "r");
    if (fp == NULL) {
       printf("File does not exist\n");
    }
    char c;
    while ((c = fgetc(fp)) != EOF) {
       printf("%c", c);
    }

    fprintf(fp, "This is a new line\n");
    fclose(fp);
    return 0;
}
```