Theory Questions

1. What is a file in C programming, and why is it used?

2. Explain the difference between text files and binary files.

3. What are the modes of opening a file in C? Provide examples.

4. Discuss the purpose of the `fopen()` and `fclose()` functions in C.

5. What is the significance of the file pointer in C? How is it declared?

6. Describe the difference between `fprintf()` and `fscanf()` with examples.

7. What are the functions used to read from and write to files in C?

8. How is error handling done while working with files in C?

9. What is the use of `ftell()`, `fseek()`, and `rewind()` functions in file handling?

10. Explain the difference between sequential and random access of files with examples.

11. What is the difference between fopen() and fwrite()?

Output-Type Questions

1. What will be the output of the following code snippet?

```
FILE *fp = fopen("example.txt", "w");
fprintf(fp, "Hello, World!");
fclose(fp);
fp = fopen("example.txt", "r");
char str[50];
fscanf(fp, "%s", str);
printf("%s", str);
fclose(fp);
```

2. Predict the output of the following code:

```
FILE *fp = fopen("test.txt", "w");
if (fp == NULL) {
  printf("File not opened!");
} else {
  fputc('A', fp);
  fputc('B', fp);
  fclose(fp);
}
fp = fopen("test.txt", "r");
printf("%c", fgetc(fp));
fclose(fp);
```

3. Given the code below, what is the output?

```
  FILE *fp = fopen("data.bin", "wb");
  int num = 12345;
  fwrite(&num, sizeof(num), 1, fp);
  fclose(fp);
  fp = fopen("data.bin", "rb");
  fread(&num, sizeof(num), 1, fp);
  printf("%d", num);
  fclose(fp);
```

4. Analyze the output of the following code:

```
  FILE *fp = fopen("example.txt", "w");
  fprintf(fp, "C programming");
  fclose(fp);
  fp = fopen("example.txt", "r");
  char str[5];
  while (fscanf(fp, "%4s", str) != EOF) {
    printf("%s\n", str);
  }
```

```
fclose(fp);
` ` `
```

5. Predict the output of this file handling snippet:

```
FILE *fp = fopen("file.txt", "w");
fprintf(fp, "%d %c %f", 100, 'A', 3.14);
fclose(fp);
fp = fopen("file.txt", "r");
int x;
char y;
float z;
fscanf(fp, "%d %c %f", &x, &y, &z);
printf("%d %c %.2f", x, y, z);
fclose(fp);
` ` `
```

6. What happens if the following code is executed?

```
FILE *fp = fopen("sample.txt", "r");
if (fp == NULL) {
   printf("Error opening file.");
} else {
   printf("File opened successfully.");
}
fclose(fp);
` ` `
```

7. What will the following program print?

```
FILE *fp = fopen("output.txt", "w");
fprintf(fp, "Line1\nLine2\n");
fclose(fp);
fp = fopen("output.txt", "r");
```

```
  char ch;
  while ((ch = fgetc(fp)) != EOF) {
    putchar(ch);
  }
  fclose(fp);
```

8. Analyze the effect of using `ftell()` and `rewind()` in this code:

```
  FILE *fp = fopen("file.txt", "w");
  fprintf(fp, "Hello");
  fclose(fp);
  fp = fopen("file.txt", "r");
  printf("%ld", ftell(fp));
  rewind(fp);
  printf("%ld", ftell(fp));
  fclose(fp);
```

9. Identify the output of this snippet:

```
  FILE *fp = fopen("numbers.txt", "w");
  for (int i = 1; i <= 5; i++) {
    fprintf(fp, "%d\n", i);
  }
  fclose(fp);
```

10. What is the result of executing this program?

```
   FILE *fp = fopen("info.txt", "w");
   fclose(fp);
   fp = fopen("info.txt", "r");
   char ch = fgetc(fp);
```

```
  printf("%c", ch);
  fclose(fp);
```

Programming Questions

1. Write a program to create a file and store 10 integers entered by the user.

2. Develop a program to read data from a text file and count the number of vowels in it.

3. Write a C program to copy the contents of one file into another.

4. Create a program that appends text to an existing file.

5. Write a program to merge the contents of two files into a third file.

6. Develop a program to reverse the contents of a text file.

7. Write a program to count the number of lines, words, and characters in a given file.

8. Create a program to read and display the contents of a binary file.

9. Write a C program to sort numbers stored in a file in ascending order.

10. Develop a program to read a list of student records (name, roll number, marks) from a file and display students with marks above 80.

11. Write a program to find and replace a specific word in a text file.

12. Create a program to demonstrate random access by reading and writing data at a specific position in a file.

13. Write a program to check whether a file exists or not using C.

14. Develop a program to read a CSV file and display its contents in tabular format.

15. Write a program to encrypt and decrypt the contents of a text file.