CL-1002 Programming Fundamentals

LAB - 12

Filing in C

NATIONAL UNIVERSITY OF COMPUTER AND EMERGING SCIENCES
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LAB 12

Files and Stream

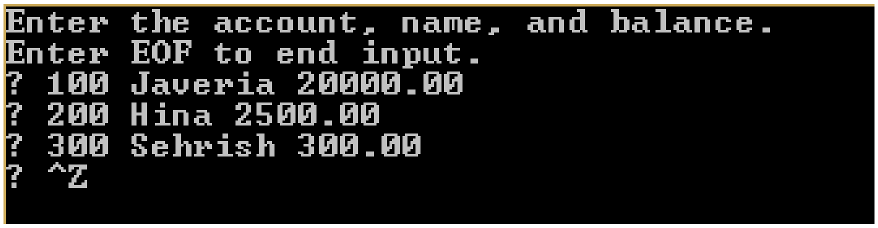
C views each file simply as a sequential stream of bytes. Each file ends either with an end-of-file marker or at a specific byte number recorded in a system-maintained, administrative data structure. When a file is opened, a stream is associated with the file. Three files and their associated streams are automatically opened when program execution begins—the standard input, the standard output and the standard error. Streams provide communication channels between files and programs. For example, the standard input stream enables a program to read data from the keyboard. The standard output stream enables a program to print data on the screen. Opening a file, returns a pointer to a FILE structure (defined in <stdio.h>) that contains information used to process the file. This structure includes a file descriptor, i.e., an index into an operating system array called the open file table. Each array element contains a file control block (FCB) that the operating system uses to administer a particular file. The standard input, standard output and standard error are manipulated using file pointers stdin, stdout and stderr.

File Handling Modes in C

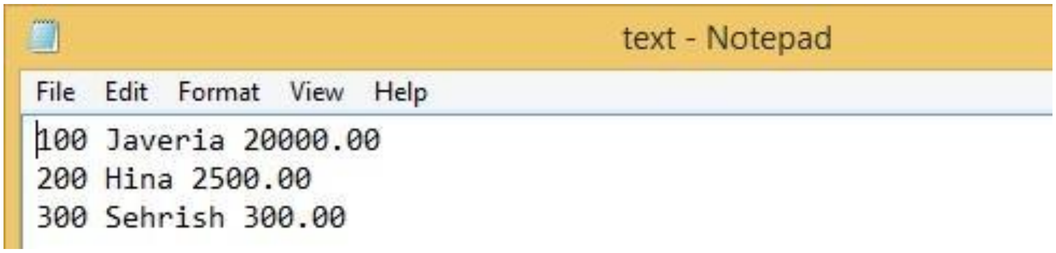
Mode	Description
r	Opens a file for reading. The file must exist.
w	Creates an empty file for writing. If a file with the same name already exists, its content is erased and the file is considered as a new empty file.
a	Appends to a file. Writing operations, append data at the end of the file. The file is created if it does not exist.
r+	Opens a file to update both reading and writing. The file must exist.
w+	Creates an empty file for both reading and writing.
a+	Opens a file for reading and appending.

Example for Writing File

```
   #include <stdio.h>
    int main( void )
    {
    int account; /* account number*/
    char name[ 30 ]; /* account name */
    double balance; /* account balance */
    /* fopen opens file. Exit program if unable to create  file  */
    FILE *cfPtr;
    cfPtr=fopen("text.txt","w");

      if ( cfPtr == NULL ) {

                          printf( "File could not be opened\n" );

      } /* end if */
      else {
      printf( "Enter the account, name, and balance.\n" );
      printf( "Enter EOF to end input.\n" );
      printf( "? " );
      scanf( "%d%s%lf", &account, name, &balance );
      /* write account, name and balance into file with fprintf */

      while (!feof(stdin))

        {
        fprintf(cfPtr,"%d %s %.2f\n",account,name,balance);
    printf( "? " );
    scanf( "%d%s%lf", &account, name, &balance );

 } /* end while */} /* end else */
```



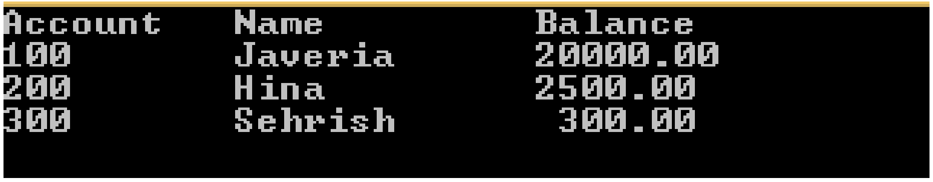
```
Enter the account, name, and balance.
Enter EOF to end input.
? 100 Javeria 20000.00
? 200 Hina 2500.00
? 300 Sehrish 300.00
? ^Z
```



```
100 Javeria 20000.00
200 Hina 2500.00
300 Sehrish 300.00
```

Example of Reading Data

```
 #include <stdio.h>
 int main( void )
   {
   int account;     /* account number */ char name[ 30 ]; /* account name */ double balance;  /*
account balance */
   /* fopen opens file; exits program if file cannot be opened */ FILE *cfPtr;
   cfPtr=fopen("text.txt","r");
   if ( cfPtr == NULL )
   {
                       printf( "File could not be opened\n" );

   } /* end if */
   else
     {
           /* read account, name and balance from file */

                       printf( "%-10s%-13s%s\n", "Account", "Name", "Balance" );

                       fscanf( cfPtr, "%d%s%lf", &account, name, &balance );

                       /* while not end of file */
                         while ( !feof(cfPtr) )
                       {
                                                 printf( "%-10d%-13s%7.2f\n", account, name, balance );
                                               fscanf(cfPtr,"%d%s%lf",&account,name,&balance);
                       } /* end while */
     } /* end else */
       return 0; /* indicates successful termination */
```



```
Account    Name         Balance
100        Javeria      20000.00
200        Hina         2500.00
300        Sehrish       300.00
```