



Department of Electrical and Computer Engineering, NSU
CSE 115L: Fundamentals of Computer Programming
Week 10 (File I/O)

FILES

Text file (stores characters)	Binary file (stores bytes)	Other File Functions
<pre>int num =7; char str = "Hello"; FILE *fp = fopen("data.txt", "w+");</pre> <p>Writing data to a text file: fprintf(fp, "%d %s", num, str);</p> <p>Reading data from a text file: fscanf(fp, "%d %s", &num, str);</p> <p>Changing position: fseek(fp, sizeof(int), SEEK_SET);</p> <p>// The above statement means that the current position in fp file stream is: SEEK_SET + 4 bytes SEEK_SET: beginning position, SEEK_CUR: current position, SEEK_END: last position</p>	<pre>int num =7; char str = "Hello"; FILE *fp = fopen("data.txt", "wb+");</pre> <p>Writing data to a binary file: fwrite(&num, sizeof(int), 1, fp);</p> <p>num (1 object) will be written to fp file and it'll need 4 bytes. The function will return number of successfully written object.</p> <p>Reading data from a binary file: fread(&num, sizeof(int), 1, fp);</p> <p>Changing position: Same as text file</p>	<p>feof(file pointer) detects end of file marker in a file</p> <p>fgets(char *str, int n, FILE *stream) read a string from file</p> <p>fputs(const char *str, FILE *stream) write a string of character on a file</p> <p>getc(file pointer) read a character from a file</p> <p>putc(char c, file pointer)</p>

File opening modes
<p>r: open for reading w: open for writing (file need not exist) a: open for appending (file need not exist) r+: open for reading and writing, start at beginning w+: open for reading and writing (overwrite file) a+: open for reading and writing (append if file exists) rb: open an existing file for reading in binary mode wb: create a file for writing in binary mode. If the file already exists, discard the current contents ab: append: Open or create a file for writing at the end of the file in binary mode rb+: open an existing file for update (reading and writing) in binary mode wb+: create a file for update in binary mode. If the file already exists, discard the current contents ab+: append: Open or create a file for update in binary mode, content is written at the end of the file</p>

Append mode is used to append or add data to the existing data of file(if any). Hence, when you open a file in Append(a) mode, the cursor is positioned at the end of the present data in the file.

<i>Reading and Writing from File using fprintf() and fscanf()</i>	<i>Reading and Writing from Binary File using fwrite() and fread()</i>
<pre> #include<stdio.h> #include<conio.h> struct emp { char name[10]; int age; }; void main() { struct emp e; FILE *p,*q; p = fopen("one.txt", "a"); q = fopen("one.txt", "r"); printf("Enter Name and Age: "); scanf("%s %d", e.name, &e.age); fprintf(p,"%s %d ", e.name, e.age); fclose(p); do { fscanf(q,"%s %d ", e.name, &e.age); printf("%s %d\n", e.name, e.age); }while(!feof(q)); getch(); } </pre>	<pre> #include<stdio.h> #include<conio.h> struct emp { char name[10]; int age; }; void main() { struct emp e; FILE *p,*q; p = fopen("two.txt", "ab"); q = fopen("two.txt", "rb"); printf("Enter Name and Age: "); scanf("%s %d", e.name, &e.age); fwrite(&e, sizeof(struct emp), 1, p); fclose(p); while((fread(&e, sizeof(struct emp), 1, q))!=0) { printf("%s %d \n",e.name, e.age); } getch(); } </pre>

TASK (10 marks)

- Write a string, a character, an int and a float value in a .txt file. Then read the data from the file and display the data.
- Write a C program to create a structures array of 3 students and write the values of the structure members into file name student.txt.
struct student

```

{
    char   name[30];      int id;      char dept[10];      float cgpa;      };

```
 - Write a function **float highestCGPA(struct student s[],int size);** that reads the cgpa from the file student.txt and returns the highestCGPA
- Create a structure named Person with two components: name and age. Create two Person variables and write the records in a text file, say "records.txt". Then read the data from file and display the average age.