CS102/IT102
Computer Programming I

Lecture 7: Data File I/O

Bicol University College of Science
CSIT Department
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Data File I/O

File Open and Close
Read and Write

Data Files: Opening & Closing

Three steps for accessing data files:

1. Data File is Opened
2. Data is Read / Written to the File
3. Data File is Closed

Opening a Data File: **`fopen()`** (1)

1: Declare a file stream pointer

2: Call the **`fopen()`** function. The function returns the address for the file stream Pointer

Example:

```
FILE *fptr;  /* declare a file ptr */
fptr=fopen("data.txt","wt");
```

Opening a Data File: `fopen()` (2)

`fopen(arg1,arg2)`

arg1: a pointer to a string containing the filename or a literal, for example: "/home/jdelacruz/myfolder/myfile.txt"

arg2: activity and filetype constants:

- **`wt`** Open an ASCII file for writing
- **`rt`** Open an ASCII file for reading
- **`at`** Open an ASCII file for appending
- **`wb`** Open a Binary file for writing
- **`rb`** Open a Binary file for reading
- **`ab`** Open a Binary file for appending

Closing a Data File: `fclose()`

Syntax:

```
fclose( fptr );
```

where *`fptr`* refers to the file stream pointer returned by the `fopen()` function.

Writing to an ASCII Data File

`fprintf( )` function

Syntax:

```
fprintf( arg1, arg2...)
```

where arg1 is the file stream pointer and arg2 are identical to arguments of the ***`printf()`*** *function*

Example:

```
fprintf(fptr,"%d\n",x);
```

Reading from an ASCII Data File

`fscanf()` function

Syntax:

```
fscanf( arg1, arg2...)
```

where arg1 is the file stream pointer and arg2 are identical to arguments of the `scanf()` *function*

Example:

```
fscanf(fptr,"%d",&x);
```

Example – Adding Two Intege

```
/* This program calculates and prints the sum of two numbers.
   Written by: Rossitza S. Marinova;  Date: January 12, 2005 */
#include <stdio.h>

int main () {
   /* Local Definitions */
   int int1;         /* first number */
   int int2;         /* second number */
   int sum;          /* will store the sum */

   /* Statements */
   printf("Enter first integer\n");     /* prompt */
   scanf("%d", &int1);                  /* read an integer */

   printf("Enter second integer\n");    /* prompt */
   scanf("%d", &int2);                  /* read an integer */

   sum = int1 + int2;                   /* add the two numbers */

   printf("The sum is: %d\n", sum);     /* print the sum */

   return 0;
} /* end of main */
```

```
Results:
Enter first intege
5
Enter second inte
19
The sum is: 24
```

Modified-Adding Two Integers

```c
/* This program is the modified "Adding Two Integers" program
that gets the input from a data file instead of the keyboard,
then outputs the result in another file. */

#include <stdio.h>

int main ()
{
   /* Local Definitions */
   int int1;   /* first number */
   int int2;   /* second number */
   int sum;    /* will store the sum */
   FILE *ifp;  /* file stream pointer for input file */
   FILE *ofp;  /* file stream pointer for output file */

   ifp = fopen("input.txt","rt");   /* open input file */
   ofp = fopen("output.txt","wt");  /* open output file */

   printf("Reading first integer from file...\n"); /* prompt */
   fscanf(ifp,"%d", &int1);         /* read an integer from file */

   printf("Reading second integer from file\n");   /* prompt */
   fscanf(ifp,"%d", &int2);         /* read an integer from file */

   sum = int1 + int2; /* add the two numbers */

   fprintf(ofp,"The sum is: %d\n", sum); /* print the sum in the output

   fclose(ifp);   /* close the input file */
   fclose(ofp);   /* close the output file */

   return 0;
} /* end of main */
```

End of Lecture 7