Practice Exercises on files

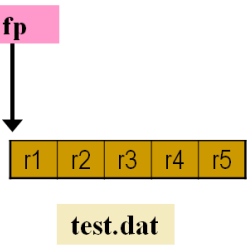
Canvas: File Exercise #1

A] Preliminaries [Recall File operations: fopen(), fclose(), and fread()]

fopen() and fclose()

```
FILE* fopen(const char *filename, const char *mode);

FILE *fp;     /* a file pointer */
fp = fopen("test.dat", "rb");
if (fp != NULL) {
   /* Do file operations HERE */
   fclose(fp);
}
```



Sample Program that reads the float values from the file.

```
size_t fread(void *buf, size_t size, size_t count, FILE *fp);
```

```
#include <stdio.h>

void main(void)
{
 FILE *fp;
 float  x;  //File element holder
 if(!(fp=fopen("test", "rb"))) {
    printf("cannot open file\n");
 } else {
    //File is successfully opened
    // Code - A
```

```
// Code - A
while ( fread(&x, sizeof(float), 1, fp) != 0) {
    /* Manipulate the current float value
       being read from the file */
 }
 fclose(fp);
} //end else
}

/*This program reads float  values one at a time
   from a disk file called test */
```

B] Problem Specification: Create the program (named: **readfile.c**) that will read the contents of the given file (named **students.dat**) 1 student record at a time and display the fields of each student record by calling function **displayStudent()**. The program has 3 functions with specification below.

Function	Specification
displayHeader()	This function will display the field titles such as ID, Lastnames, etc. This will be called once only and will be called before any call to displayStudent(). Complete code is given.
displayStudent()	This function will all the field members of the given Studtype record in 1 horizontal line. After every 20 records displayed, call the OS command "Pause" to halt/stop until any key is pressed in the keyboard.
readFile()	This function reads the student records in the given file 1 record at a time and calls displayStudent() to display all the fields in the given record. Note that the name of the file will be inputted by the user from the keyboard.

Partial Program

```
//A] Include files

//B] Data Structure Definition
typedef struct {
  char FN[24];  //firstname
  char MI;      //middle initial
  char LN[16]; //lastname
}Nametype;
typedef struct {
  Nametype name;
  int ID;
  char course[8];  //BSCS, BSIS, BSIT
  int yrLevel;
}Studtype;

//C] Function Prototypes
void displayHeader();
void displayStudent(Studtype S);
void readFile();
```

```
//D] The main() function:  Calls readFile() function.


void displayHeader()
{
   printf("\n\n");
   printf("%-10s", "ID No.");
   printf("%-16s", "Lastname");
   printf("%-24s", "Firstname");
   printf("%-3s", "MI");
   printf("%-8s", "Course");
   printf("%5s", "Year");
   printf("\n");
   printf("%-10s", "======");
   printf("%-16s", "========");
   printf("%-24s", "=========");
   printf("%-3s", "==");
   printf("%-8s", "======");
   printf("%5s", "====");
}
```

Partial Output

```
Enter a file name : students.dat


ID No.    Lastname        Firstname          MI Course   Year
======    ========        =========          == ======   ====
22105020  APOS            RIEL JASPER        A  BSCS      2
11300246  CABOGOY         ZYGUEL PHILIP      E  BSIT      2
22102846  CALAYCAY        MATTHEW CEDRIC     D  BSCS      2
```

// 20 student records will be displayed before Press any key

```
Press any key to continue . . .

20103709  GRAVADOR        KAELLE STEFANIE    N  BSIT      2
19104099  JUGALBOT        MARK ALLEN         P  BSCS      2
```

//additional student records here

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