Fall 2007	B561 Assignment-1 (Survey of I/O Facilities)	H. Hakimzadeh 20 Pts.

Objective:

The objective of this assignment is to study and document the I/O facilities (libraries, class hierarchies, macros, etc.) of a language of your choice. Solid knowledge of these facilities will simplify your future assignments.

For this assignment you may choose to work alone or may form a group with another classmate. In order to implement a database engine, one needs to understand the underlying file organizations and access methods. Throughout this course we will write a number of programs in C++ (or another language of your choice) which requires intimate knowledge and understanding of the available I/O facilities. This assignment is designed to familiarize you with the I/O facilities of the language of your choice. (Make sure that your language provide sufficient facilities for sequential and random access I/O). Your paper must **(approximately)** follow the outline below:

> 0) Cover Page
> 1) Table of Contents (with page numbers)
> 2) Introduction
> 3) I/O facilities in "Language of your choice"
>   - Discussion of I/O libraries or classes, the Inheritance Hierarchy
>   - Classes and short description of their functions, sample code for the most common/useful methods.
> 4) Conclusion
> 5) References (Manuals, books, compilers, web sites, etc.)

Your paper must provide a description, of the macros, functions, data types and if appropriate the class hierarchy for the I/O facilities. Each class/method (or group of methods) must be followed by one or more example of how it/they could be used in the context of a program. (Start your paper early!)

What to hand in:
◘ Cover page with paper title, your name, course # and name, assignment #, date, etc.
◘ A paper entitled "A Survey of I/O Facilities in ...." (Minimum of 10 pages)
◘ Make sure to properly cite any text, web site, code examples, etc which may appear in your paper.
◘ Don't forget to include page numbers.

B561 (File Organization)
Sample Grade Sheet

Name:	Comments:	
Assignment # 1	**Survey of C and C++, I/O facilities**	
1) Table of Contents		
2) Introduction		

3) I/O facilities in "C"

- A short description
- Header files
  (stdio.h)
  (conio.h)
  (io.h)
  (sys/stat.h)
- Macros
- function calls
- Examples

□ **Macros:**
□ getchar()
□ putchar(int)
□ getc(FILE *)
□ putc(int, FILE *)

□ **Functions:**
□ printf()
□ scanf()
□ ungetc(int,FILE *)
□ puts(char *)
□ gets(char *)

□ fopen(char *, char *)
□ fclose(FILE *)
□ fcloseall(void)
□ fscanf(FILE *, char, ..)
□ fpirntf(FILE *, char *,..)
□ fgetc(FILE *)
□ fputc(int, FILE *)
□ fputchar(int)
□ fread(void *, size_t,
          size_t, FILE *)
□ fwrite(void *,size_t,
          size_t, FILE *)
□ fstat(int, struct stat *)

□ fgets(char *,int,FILE *)
□ fputs(char *, FILE *)
□ fseek(FILE *, long, int)
□ ftell(FILE *)
□ feof(FILE *) (Macro)
□ ferror(FILE *) (Macro)
□ fflush(FILE *)
□ rewind(FILE *)
□ unlink(char *)

□ vprintf()
□ vscanf()
□ vfprintf()
□ vfscanf()

□ **Low Level I/O:**
□ create(char *,int)
□ open(char*, int,
          [unsigned])
□ close(int)
□ read(int, void *,
          unsigned)
□ write(int, void *,
          unsigned)
□ lseek(int, long, int)
□ chmod(char *, int)

4) I/O facilities in C++

- short description
- Header files
  (iostream.h)
  (fstream.h)
  (iomanip.h)
  (stdiostream.h)
  (strstream.h)
- Inheritance Hierarchy
- Classes and their functions

Classes & Functions:

□ **ios**
  bad()
  good()
  fail()
  eof()
□ **istream**
  get()
  getline()
  read()
  seekg()
  peek()
  putback()
  ignore()
  gcount()
  □ **ifstream**
    open()

□ **ostream**
  put()
  write()
  seekp()
  tellp()
  flush()
  □ **ofstream**
    open()
□ **istream & ostream**
  □ **iostream**
    No functions, just combines the functions from its parent classes)
□fstreambase&iostream
  □ **fstream**
    open()

5) Conclusion		
6) References (Manuals, books, compilers, etc..)		
	Grade:	

Note: If you plan to write your paper on a language other than C or C++, you must propose and receive approval for a grade sheet (similar to the one shown above) before you begin your paper.