Streams in C++

CSL202 OOP

SEM III

Hierarchy and functions of stream classes

covered in class

File Streams

Output Method	Use	Input Method
cout	To read input (stops reading at space/tab/newline)	cin
put(char ch)	To read write one character at a time	get(char ch) get(char*cstr, int len, char delim=‘\n’)
write(char* val, int size)	Can be used to read write numeric values	read(char* val, int size)
	To read input (stops reading at newline)	getline(ifstream in, string line)
	To read input (stops reading at delimiter)	getline(ifstream in, string line, char delimiter)

Sample Code

```
ofstream out(“x.txt”);
int i;
char cstr[]=“CSL202 OOP”;
for(i=0;i<strlen(cstr);i++){
out.put(cstr[i]);
}
out.put(‘\0’);
```

```
 char ch;
 ifstream in(“x.txt”);
while(in){
in.get(ch);
cout<<ch;
}
```

```
char cword[20];
cin.get(cword,20);
cout<<cword;


string line;
while(!in.eof()){
getline(in,line);
cout<<line;
}
```

Modes of Opening a file

Modes are specified using flags from the <fstream> library

They determine whether the file is opened for reading, writing or appending

- ios::in → Open for reading (file must already exist)
- ios::out → Open for writing (truncates it to zero length)
- ios::app → Open for appending to the file.
- ios::trunc → Truncate the file if it exists.
- ios::ate → Open and move the file pointer to the end.
- ios::binary → Open in binary mode. Used in combination with other modes.

Example

```
// Open a file for reading and writing

fstream file("example.txt", ios::in | ios::out);       >Default mode
```

Random Access

Member functions in the file stream classes facilitate random access to files:

seekg() or seek get

```
istream& seekg(streampos pos);
istream& seekg(streamoff off, ios_base::seekdir dir);
```

- Moves the input file pointer to a specified location for reading.
  - pos: Absolute position to move the file pointer.
  - off: Offset from the given position (dir).
  - dir: Direction from which the offset is applied (ios::beg, ios::cur, or ios::end).

Eg. file.seekg(0, ios::beg);

Move input file pointer (seekg) to the beginning of the file

Contd..

seekp() or seek put

```
ostream& seekp(streampos pos);
ostream& seekp(streamoff off, ios_base::seekdir dir);
```

- Moves the output file pointer to a specified location for writing.

Eg. File contents > “Hello World”

// Move the output file pointer (seekp) to the 6th position (i.e. start of "World")

file.seekp(6, ios::beg);

tellg()

- Returns the current position of the input file pointer.

tellp()

- Returns the current position of the output file pointer.

Returns 0 at beg of file

If we write Hello World to a file, the tellp() will return 11 i.e. next position where write will occur.

Exercise

1. Write a C++ program to read a fixed length delimited file. Containing ID = 5 Name = 15 Marks = 3 of student.

Display the ID on console if marks are more than 85.

Use random access functions.

2. Write a program to replace all occurrences of HORROR with COMEDY in the file “movie_data.txt” using random access functions