

# Object-oriented Programming

**Week 10** | Lecture 2

# Stream



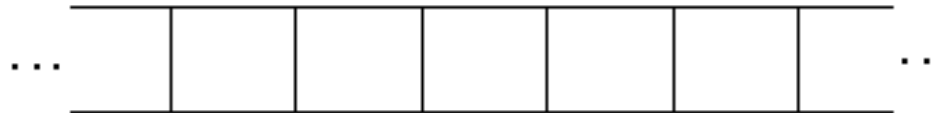
# Stream (for us...)

## Input Stream



*Sequence of bytes/characters read*

## Output Stream



*Sequence of bytes/characters written*



# istream/ostream Member Functions

- Both the *istream* and *ostream* classes provide member functions for input/output of data
- These member functions can be called using the *iostream* objects such as *cin* & *cout*

# Reading a character from file

*get()*

The **get()** member function of ifstream class reads a single character from the file input stream (including white-space and other characters like EOF) and returns it

# Reading a character from file

*get()*

**Example:**

```
ifstream in("xyz.txt");
```

```
char c = in.get();
```

```
cout << c;
```

# Reading a character from file

## *get(char)*

The **get(char)** member function of *ifstream* class reads a single character from the file input stream (including white-space and other characters like EOF) in the character variable specified in the argument

# Reading a character from file

*get(char)*

**Example:**

```
ifstream in("xyz.txt");
```

```
char c;
```

```
in.get(c);
```

```
cout << c;
```



# Reading a line from file

***getline(ifstream, string)***

The function **getline(ifstream, string)** reads a single line from the file input stream specified as first argument and saves it in the string specified as the second argument

# Reading a line from file

*getline(ifstream, string)*

## Example:

```
ifstream in("xyz.txt");  
string line;  
getline(in, line);  
cout << line;
```

# Reading bulk text from a file

*read(char\*, int)*

The function **read(char\*, int)** reads *n* characters (including whitespaces and eof) into the buffer specified as first argument. The value of *n* is specified as second argument

# Reading bulk text from a file

*read(char\*, int)*

**Example:**

```
ifstream in("xyz.txt");
```

```
char* text;
```

```
int n = 20;
```

```
in.read(text, n);
```

# Writing a character to file

***put(char)***

The **put(char)** member function of ofstream class writes a single character, taken as argument, to the file specified by file output stream object

# Writing a character to file

***put(char)***

**Example:**

```
ofstream out("xyz.txt");
```

```
out.put('A');
```

```
char c = 'B';
```

```
out.put(c);
```

# Writing bulk text to a file

***write(char\*, int)***

The function **write(char\*, int)** writes *n* characters from the *char\** buffer specified as first argument to the file. The value of *n* is specified as second argument

# Writing bulk text to a file

***write(char\*, int)***

**Example:**

```
ofstream out("xyz.txt");
```

```
out.write("This is some text", 8);
```

```
char* c = "This is some other text";
```

```
out.write(c, 10);
```



# istream Member Function

*eof()*

- It returns **1** (TRUE) when there are no more data to be read from an input stream, and **0** (FALSE) otherwise

```
int main()
{
int character;
cout << "Before input, cin.eof() is " << cin.eof();
cout << "Enter input followed by eof" << endl;

while((character = cin.get()) != EOF)
    cout.put( character );

cout << "EOF in this system is: " << character;
cout << "After input, cin.eof() is: " << cin.eof();
}
```

# Output

```
Before input, cin.eof() is 0
Enter a sentence followed by end-of-file:
Testing the get and put member functions
Testing the get and put member functions
^Z

EOF in this system is: -1
After input of EOF, cin.eof() is 1
```

# istream Member Function

## *ignore()*

- The **ignore()** function of istream reads and discards a designated number of characters (the default is one) or terminates upon encountering a designated delimiter

# istream Member Function

## *putback()*

- The **putback()** function places the previous character obtained by a get from an input stream back into that stream

# istream Member Function

## *peek()*

- The **peek()** function returns the next character from an input stream but does not remove the character from the stream

# Notes

- The default **end-of-file (EOF)** character sequence in Windows is ***Ctrl+Z***
- The default delimiter in most systems is '**\n**' or newline character