

FILE IO

Problem Solving with Computers-I

C++

```
#include <iostream>
using namespace std;

int main(){
    cout<<"Hola Facebook\n";
    return 0;
}
```



I/O in programs

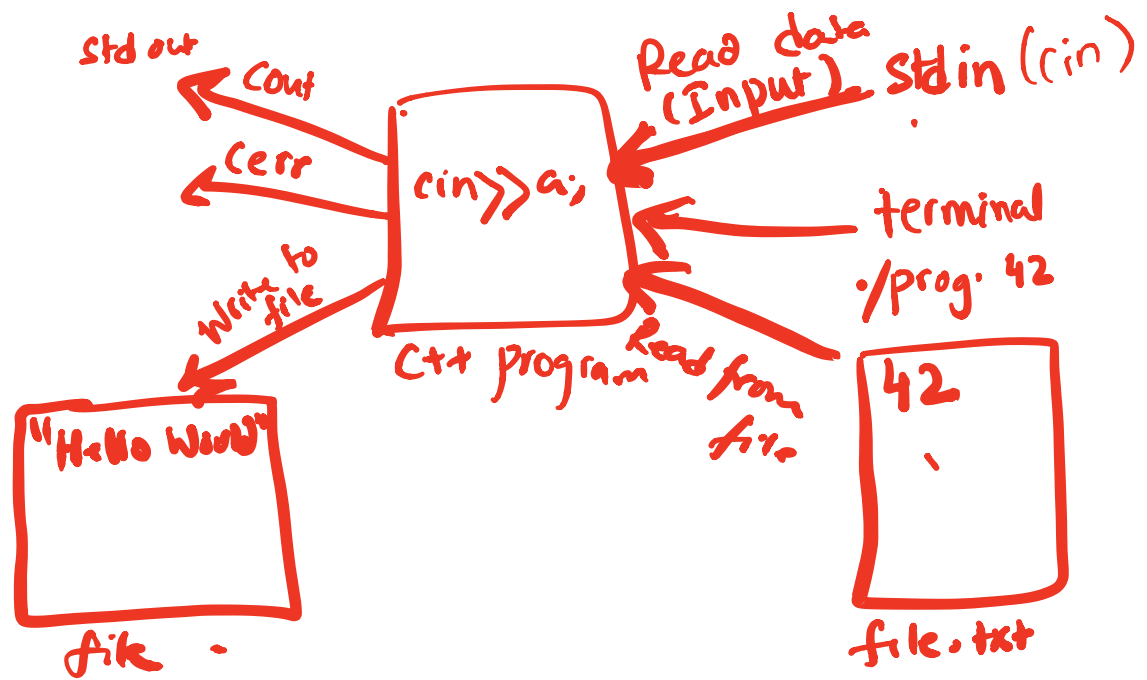
Different ways of reading data into programs

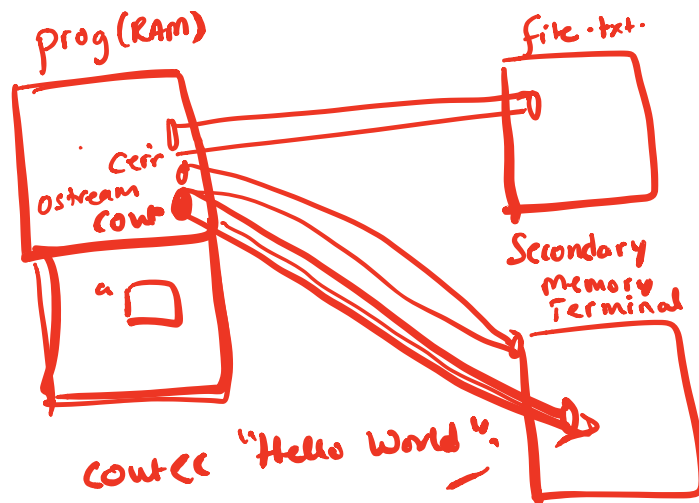
- Standard input (stdin) using cin
- Command line arguments (int main(int argc, char* argv[])
- Read from file

Ways to output data

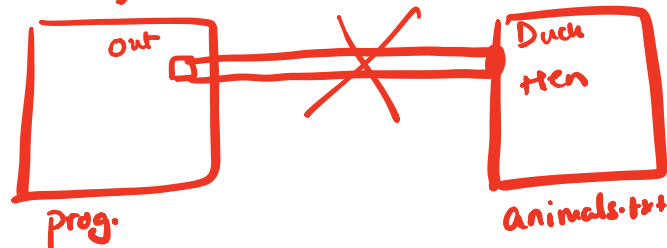
- Standard output: cout
- Standard error: cerr
- Write to file

Different ways of input/output in C++ programs





Writing to a file.



```
#include <fstream>
int main () {
    ofstream out;
    out.open ("./animals.txt");
    out << "Duck\n";
    out << "Hen\n";
    out.close();
    return 0;
}
```

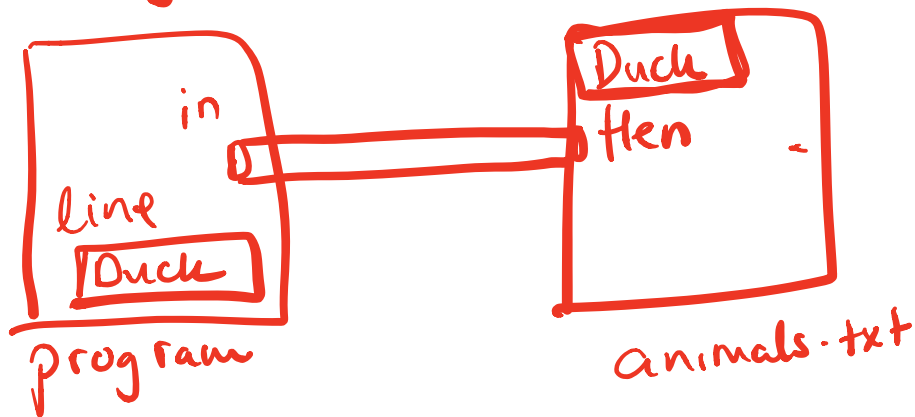
Writing to files

```
#include <fstream>
ofstream ofs; // Create a ofstream object
ofs.open("animals.txt"); //Open a file to write to
ofs<<"Duck\n"<<"Cat\n"<<"Cow\n";
```

Reading from files

- Open a file
- If open fails, exit
- In a loop
 - Read a line
 - If you reach the end of file, break
 - Else process the line that was read
- Close the file

Reading from a file.



```
#include <fstream>
```

```
using namespace std;
```

```
int main() {
```

```
    string line;
```

```
    ifstream in;
```

```
    ✓ in.open("./animals.txt")
```

```
    if (!in) {
```

```
        cerr << "Open failed\n";
```

```
        return 0;
```

```
    } getline(in, line);
```

```
    cout << line << endl;
```

```
    getline(in, line);
```

```
    cout << line << endl;
```

```
    getline(in, line); // Read line
```

```
    return 0;
```

```
}
```

beyond the
end of file
// in is false

Assume "in" is a ifstream variable that was used to open a file. Assume open was successful

Write code that reads all the lines in the file iteratively (using loops) and prints each line to std out. (All the different ways are correct)

(A)

```
while (in) {  
    getline(in, line);  
    if (!in) { //check for end of file  
        break;  
    }  
    cout << line << endl;  
}
```

(B)

```
while (in) {  
    getline(in, line);  
  
    if (in) {  
        cout << line << endl;  
    }  
}
```

(C)

```
getline(in, line);  
while (in) {  
    cout << line;  
    getline(in, line);  
}
```


// Accumulator pattern

```
string result = "";
```

```
getline(in, line);
```

```
while (in) {
```

```
    result = result + line;
```

```
    getline(in, line);
```

```
}
```

```
cout << result;
```

duck
cat
cow

result

duckcatcow

"

Reading from files

```
#include <fstream>
ifstream ifs; // Create a ifstream object
ifs.open("numbers.txt"); //Open a file to read
if(!ifs){
    // open failed
}
getline(ifs, line); // read a line from the file into a
                    // string line.
                    // If you attempt to read past the end
                    // of file, ifs change to false

// If the file was empty, ifs will be false at this point
ifs.close()
```

FILE IO: Which of the following is correct?

ifs is a ifstream variable

A. `while (1) {
 getline(ifs, line);
 if (!ifs)
 break;
 cout<<line<<endl;
}`

C. Both A and B are correct

B. `while(ifs) {
 getline(ifs, line);
 cout<<line<<endl;
}`

D. Neither is correct