

## User Defined Header Files

CS1A

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Functions - P2

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## Header files

- So far we've worked with several header files
  - files that follow `#include`
  - `<iostream>`
  - `<iomanip>`
  - `<fstream>`
  - `<string>`
- We include these to be able to access certain predefined functions, classes, or variables in C++

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## Creating our own

- It is often convenient to create your own header files
- To do this we need to
  - create the file
  - Include it in our source code
- Creating the file
  - create a new file `filename.h`
    - end it with `.h`
- Including the file
  - `#include "filename.h"`

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## Header File

```
// these two lines and the last one ensure that you
// don't accidentally make the same definitions twice - it is a good
// practice to include them
// this example assumes your header file name is MyHeader.h

#ifndef MYHEADER_H_
#define MYHEADER_H_

<your preprocessor directives>
<global constants>
<your typedefs and enumerated types>
<your function prototypes>
#endif
```

We will discuss these later

### NOTE:

eclipse will automatically include the lines of code that are in black  
→ you **MUST** insert your preprocessor directives, typedefs,  
and enumerated types as specified

## Example: Creating a header file

```
// this file is called myheader.h
#ifndef MYHEADER_H_
#define MYHEADER_H_

// preprocessor directives go here
#include <iostream>
#include <iomanip>
#include <string>
using namespace std;

// Global Constants
// User Defined Types go here (more on this later)

// Prototypes go here
int SearchStArray(string stAr[], string searchStr);

#endif /* MYHEADER_H_ */
• To include this file
#include "MyHeader.h"
```

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## Some points to mention

- you must use quotes in your header file
  - "MyHeader.h" → NOT <MyHeader.h>
- the file must be located in your project folder
  - otherwise C++ can't find it

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## How to include source code

- Create the file as a source file (.cpp)
- add your code (make sure you use the headers that you need)
- put the source file in the same folder as your main.cpp
- Don't #include for source code

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## Common Errors

- Make sure your files are all in the same folder
- Make sure that you have your preprocessor directives BEFORE your prototypes
  - ORDER MATTERS
    - 1 - preprocessor directives
      - # includes & namespace
    - 2 - global constants
    - 3 - typedefs and enumerated types
    - 4 - prototypes
- You can't have code in the header file
- You can have code in a separate file
- You can only have 1 int main()

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## Good Practices

- Keep related functions in the same files
  - e.g. I/O
- Separating your files makes them easier to manage
  - your main.cpp can get long and difficult to find things

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## Some Notes on Functions

- Keep them simple and try to make them generic  
→ that way you can reuse them

Example:

```
float AverageTwoInts (int int1,  
                     int int2)
```

Instead of

```
float AverageTwoAges (int age1,  
                     int age2)
```

- Keep them Simple!
  - each function should do 1 thing
  - In otherwords → if you need to search for something  
your function should just search for that something  
not deal with I/O specific to your project

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