

CS102: Editor, Compiler and Hello World

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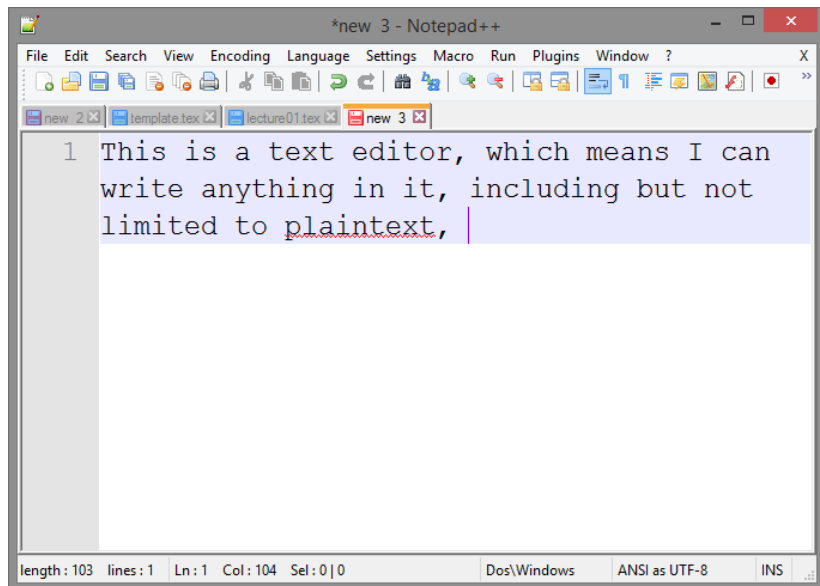




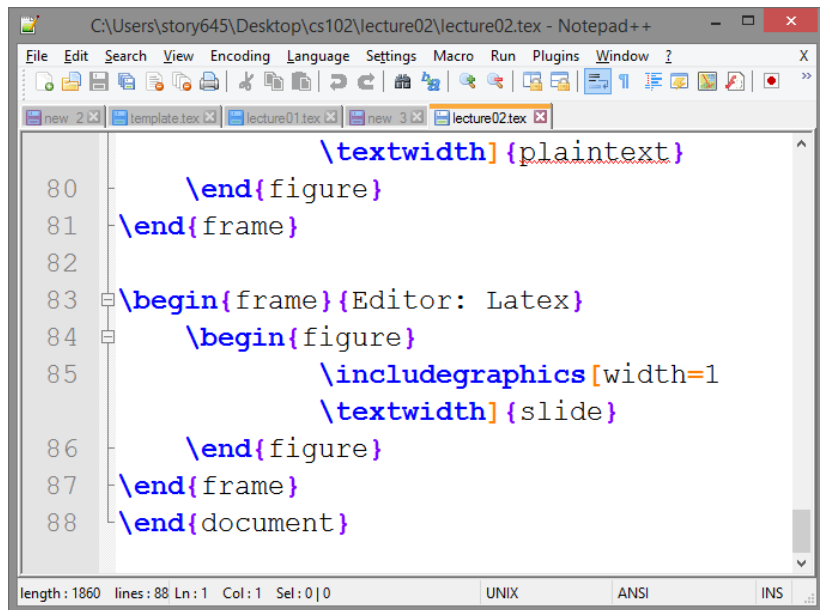
take out flatbread,
cut it in half,
place patty, ...

Flatbread,
veggie patty,
cheddar,
onions, ...

Editor: Plaintext



Editor: Latex

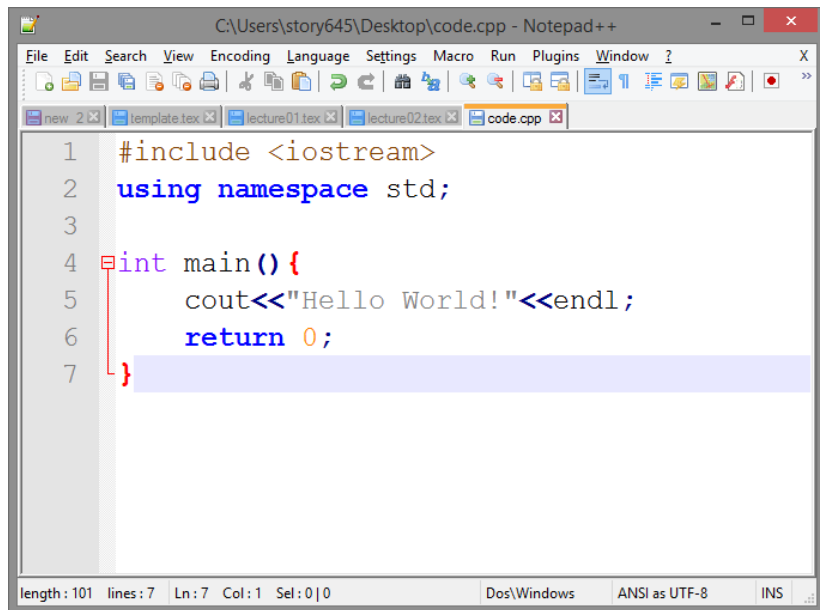


The image shows a Notepad++ window titled "C:\Users\story645\Desktop\cs102\lecture02\lecture02.tex - Notepad++". The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Macro, Run, Plugins, Window, and Help. The toolbar contains various icons for file operations and editing. The tab bar shows four tabs: "new 2", "template.tex", "lecture01.tex", and "lecture02.tex". The main text area contains LaTeX code with line numbers 80 through 88 on the left. The code defines a frame containing a figure, which includes a slide with a specified width. The status bar at the bottom displays "length: 1860", "lines: 88", "Ln: 1", "Col: 1", "Sel: 0|0", "UNIX", "ANSI", and "INS".

```
80         \textwidth]{plaintext}
81     \end{figure}
82 \end{frame}
83 \begin{frame}{Editor: Latex}
84     \begin{figure}
85         \includegraphics[width=1
86         \textwidth]{slide}
87     \end{figure}
88 \end{frame}
89 \end{document}
```

length: 1860 lines: 88 Ln: 1 Col: 1 Sel: 0|0 UNIX ANSI INS

Editor: Code



C:\Users\story645\Desktop\code.cpp - Notepad++

File Edit Search View Encoding Language Settings Macro Run Plugins Window ?

new 2 x template.tex lecture01.tex lecture02.tex code.cpp

```
1 #include <iostream>
2 using namespace std;
3
4 int main() {
5     cout<<"Hello World!"<<endl;
6     return 0;
7 }
```

length: 101 lines: 7 Ln: 7 Col: 1 Sel: 0 | 0 Dos\Windows ANSI as UTF-8 INS

Editor: Use

- Use something simple that supports:
 - code highlighting
 - code folding

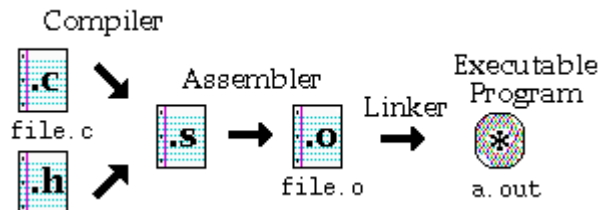
Editor: Use

- Use something simple that supports:
 - code highlighting
 - code folding
- Any platform:
 - terminal: vim, emacs, jed, nano
 - graphical: sublime

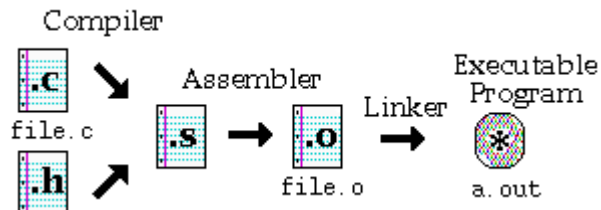
Editor: Use

- Use something simple that supports:
 - code highlighting
 - code folding
- Any platform:
 - terminal: vim, emacs, jed, nano
 - graphical: sublime
- Windows: notepad++, notepad
- Mac: texwrangler, aquamacs, smultron
- Linux: kate, gedit, scite

Compiler



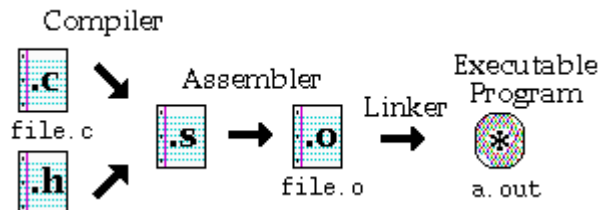
Compiler



Stages

- **Compiler:** Source code (.c/.cpp) converted into low level language (Assembly/.s)

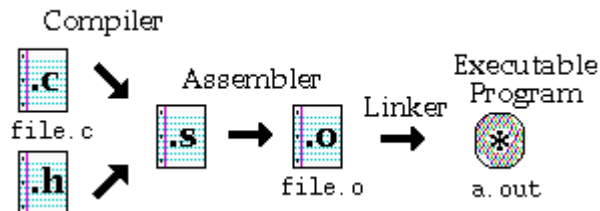
Compiler



Stages

- **Compiler:** Source code (.c/.cpp) converted into low level language (Assembly/.s)
- **Assembler:** Assembly converted into machine code (object files/.o)

Compiler



Stages

- **Compiler:** Source code (.c/.cpp) converted into low level language (Assembly/.s)
- **Assembler:** Assembly converted into machine code (object files/.o)
- **Linker:** Links object files to prewritten/built-in functions and creates executable (.out/.exe)

Compiler: Use

Required for Class

gcc and g++

Required for Class

gcc and g++

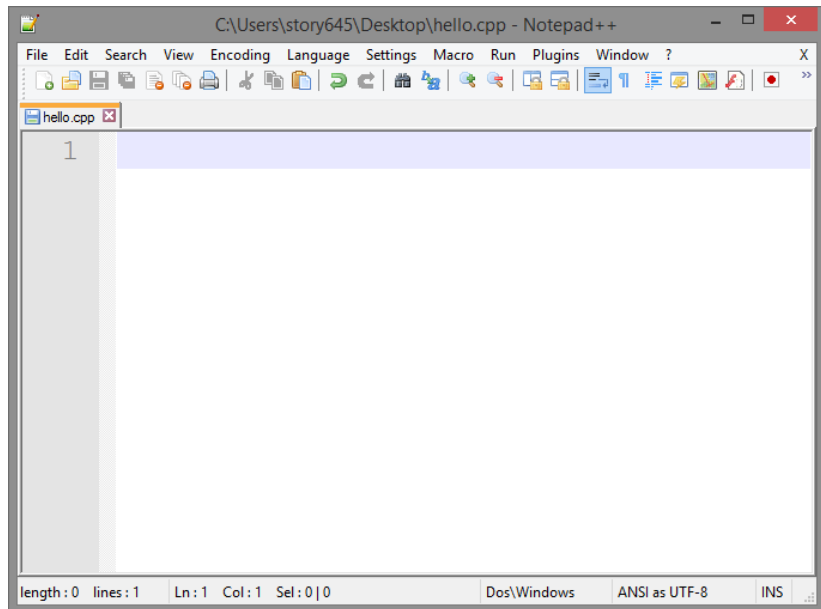
GNU Compiler Collection

- GNU is a unix-like environment
- GNU components built into linux
- GNU emulators required for Windows/Mac

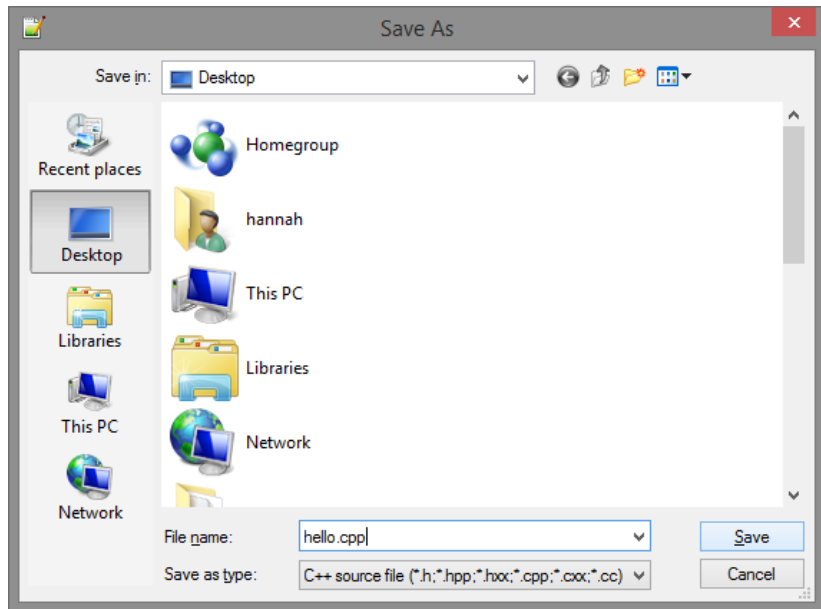
GNU Emulators

- Windows: MinGW or Cygwin
- Mac: homebrew
 - xcode has to be installed for this to work but don't use xcode
- Linux: don't need emulator, already baked in
- **Note:** Compiler run from terminal/command prompt

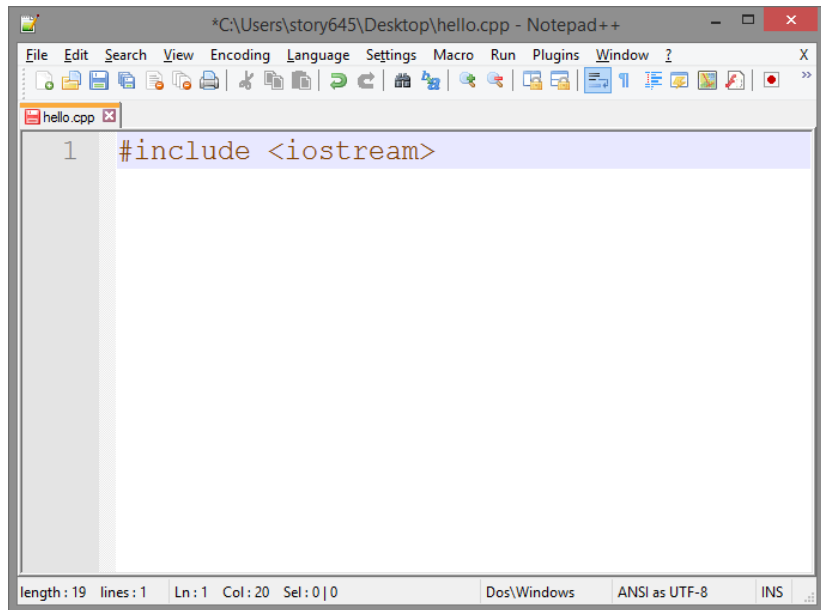
Hello World: Open Editor



Hello World: Save as .cpp



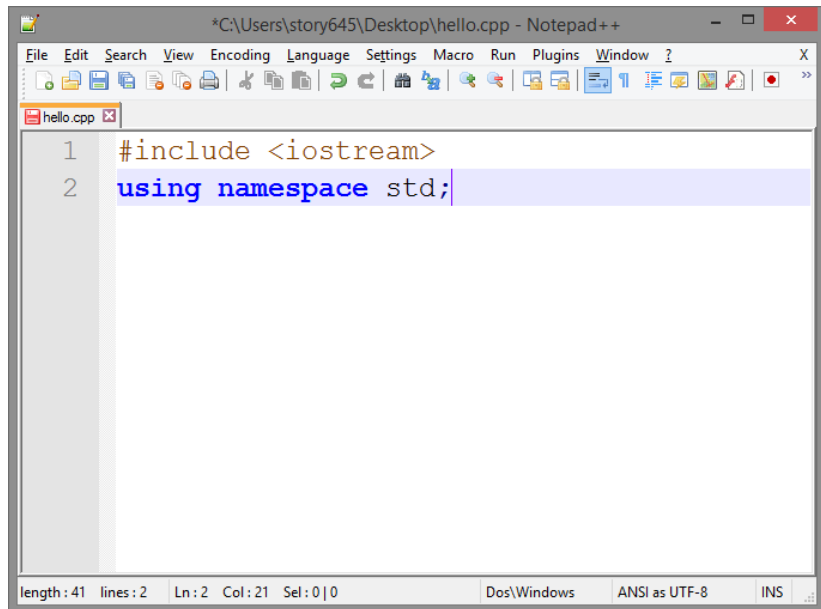
Hello World: Include



The image shows a Notepad++ window titled "*C:\Users\story645\Desktop\hello.cpp - Notepad++". The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Macro, Run, Plugins, Window, and ?. The toolbar contains various icons for file operations and editing. A single tab labeled "hello.cpp" is open. The text area contains the code `#include <iostream>` on line 1, which is highlighted in light blue. The status bar at the bottom displays "length: 19 lines: 1 Ln: 1 Col: 20 Sel: 0 | 0", "Dos\Windows", "ANSI as UTF-8", and "INS".

```
1 #include <iostream>
```

Hello World: Namespace

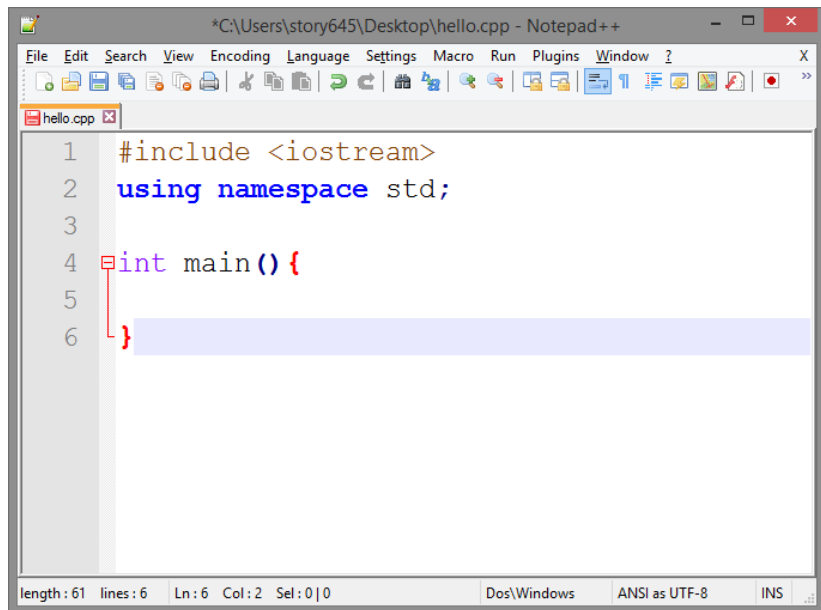


The image shows a Notepad++ window titled "*C:\Users\story645\Desktop\hello.cpp - Notepad++". The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Macro, Run, Plugins, Window, and ?. The toolbar contains various icons for file operations and editing. The editor has a single tab labeled "hello.cpp". The code is as follows:

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

The status bar at the bottom displays "length: 41 lines: 2 Ln: 2 Col: 21 Sel: 0 | 0", "Dos\Windows", "ANSI as UTF-8", and "INS".

Hello World: Main

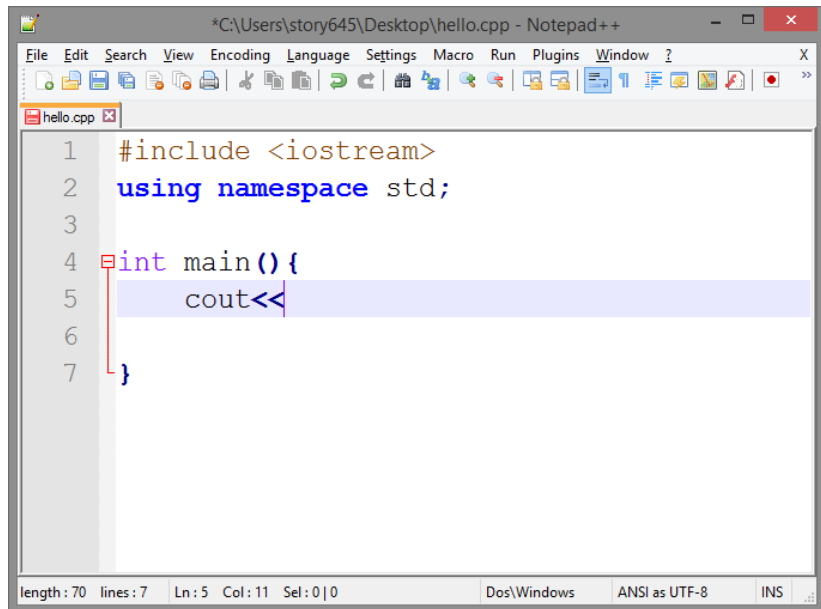


The image shows a Notepad++ window titled "*C:\Users\story645\Desktop\hello.cpp - Notepad++". The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Macro, Run, Plugins, Window, and ?. The toolbar contains various icons for file operations and editing. The editor has a tab labeled "hello.cpp". The code is as follows:

```
1  #include <iostream>
2  using namespace std;
3
4  int main() {
5
6  }
```

A red bracket on the left side of the editor groups lines 4 and 6, indicating the scope of the `main()` function. The status bar at the bottom shows "length: 61", "lines: 6", "Ln: 6", "Col: 2", "Sel: 0 | 0", "Dos\Windows", "ANSI as UTF-8", and "INS".

Hello World: Cout

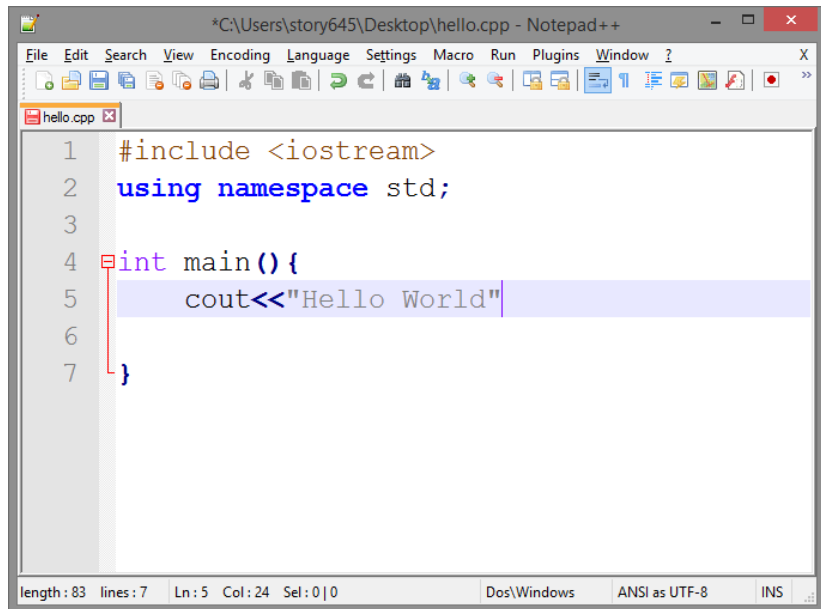


The image shows a Notepad++ window titled "*C:\Users\story645\Desktop\hello.cpp - Notepad++". The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Macro, Run, Plugins, Window, and ?. The toolbar contains various icons for file operations and editing. The editor window shows a C++ program with line numbers 1 through 7 on the left margin. The code is as follows:

```
1  #include <iostream>
2  using namespace std;
3
4  int main() {
5      cout<<
6
7  }
```

The status bar at the bottom displays "length: 70 lines: 7 Ln: 5 Col: 11 Sel: 0|0", "Dos\Windows", "ANSI as UTF-8", and "INS".

Hello World: Hello

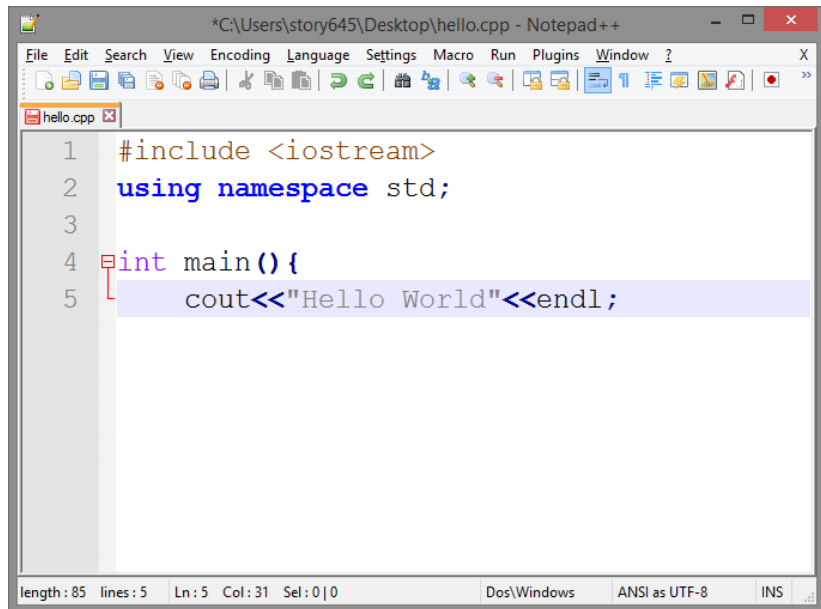


The image shows a Notepad++ window titled "*C:\Users\story645\Desktop\hello.cpp - Notepad++". The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Macro, Run, Plugins, Window, and ?. The toolbar contains various icons for file operations, editing, and development. The editor window shows a C++ program with line numbers 1 through 7 on the left. The code is as follows:

```
1  #include <iostream>
2  using namespace std;
3
4  int main() {
5      cout<<"Hello World"
6
7  }
```

The status bar at the bottom displays "length: 83 lines: 7 Ln: 5 Col: 24 Sel: 0|0", "Dos\Windows", "ANSI as UTF-8", and "INS".

Hello World: End!

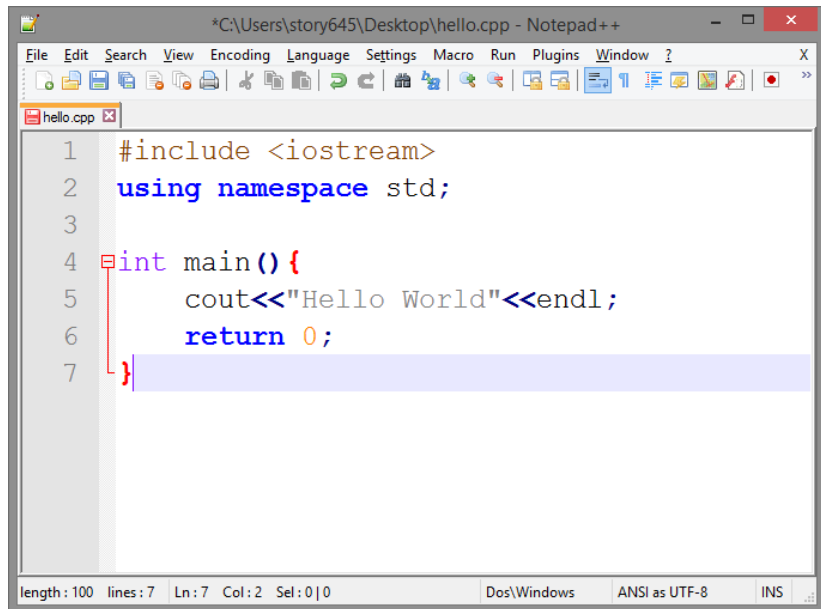


The image shows a Notepad++ window titled "*C:\Users\story645\Desktop\hello.cpp - Notepad++". The window contains a C++ program with the following code:

```
1  #include <iostream>
2  using namespace std;
3
4  int main() {
5      cout<<"Hello World"<<endl;
```

The code is displayed with syntax highlighting: `#include` is orange, `using namespace` is blue, `std;` is blue, `int` is purple, `main()` is purple, and `cout<<"Hello World"<<endl;` is black. A light blue selection bar highlights the line `cout<<"Hello World"<<endl;`. The status bar at the bottom shows "length: 85 lines: 5 Ln: 5 Col: 31 Sel: 0|0", "Dos\Windows", "ANSI as UTF-8", and "INS".

Hello World: Return

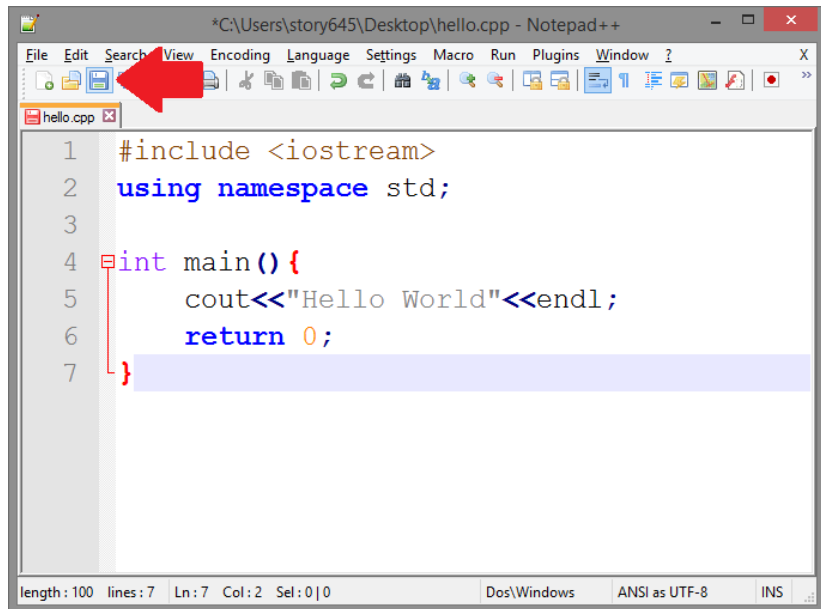


The image shows a Notepad++ window titled "*C:\Users\story645\Desktop\hello.cpp - Notepad++". The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Macro, Run, Plugins, Window, and ?. The toolbar contains various icons for file operations and editing. The editor window shows a C++ program with line numbers 1 through 7 on the left. The code is as follows:

```
1  #include <iostream>
2  using namespace std;
3
4  int main() {
5      cout<<"Hello World"<<endl;
6      return 0;
7  }
```

The status bar at the bottom displays "length: 100 lines: 7 Ln: 7 Col: 2 Sel: 0 | 0", "Dos\Windows", "ANSI as UTF-8", and "INS".

Hello World: Save

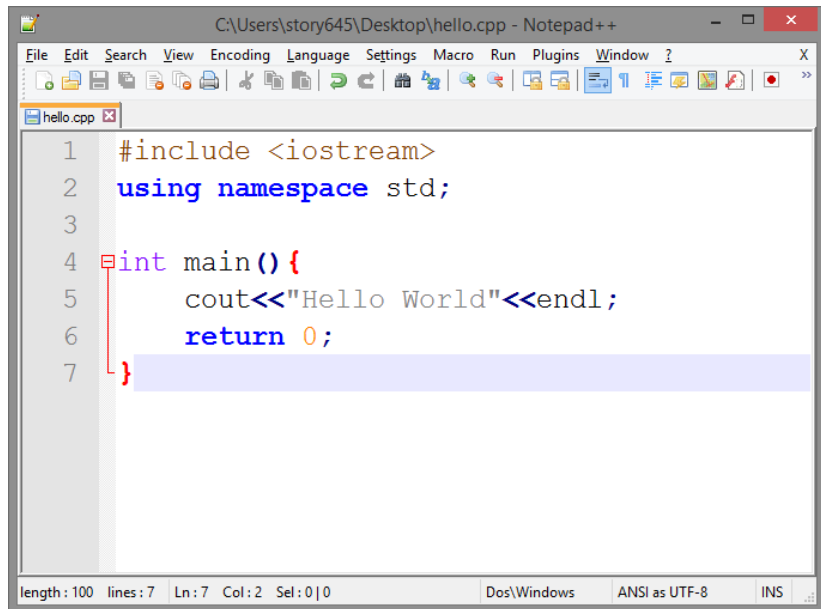


The screenshot shows the Notepad++ application window with the file path `*C:\Users\story645\Desktop\hello.cpp - Notepad++`. The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Macro, Run, Plugins, Window, and ?. The toolbar contains various icons, with a red arrow pointing to the 'Save' icon (a floppy disk). The editor displays the following C++ code:

```
1  #include <iostream>
2  using namespace std;
3
4  int main() {
5      cout<<"Hello World"<<endl;
6      return 0;
7  }
```

The status bar at the bottom shows: length: 100 lines: 7 Ln: 7 Col: 2 Sel: 0 | 0, Dos\Windows, ANSI as UTF-8, and INS.

Hello World: Saved

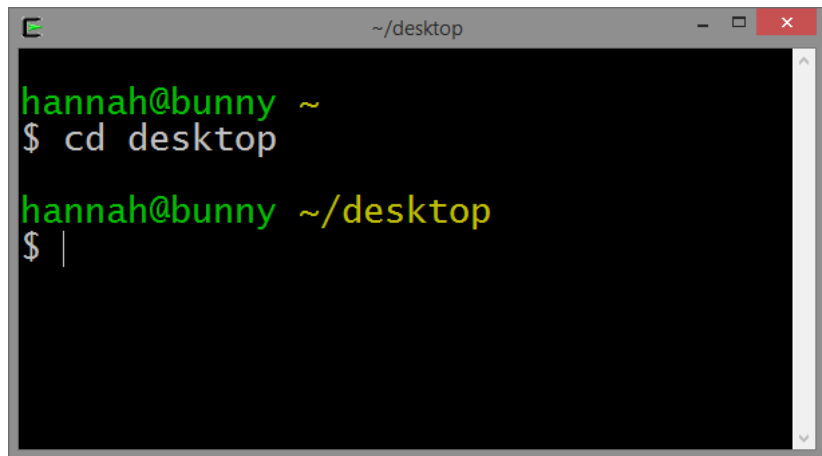


The image shows a Notepad++ window titled "C:\Users\story645\Desktop\hello.cpp - Notepad++". The window contains a C++ program that prints "Hello World". The code is as follows:

```
1  #include <iostream>
2  using namespace std;
3
4  int main() {
5      cout<<"Hello World"<<endl;
6      return 0;
7  }
```

The status bar at the bottom indicates the file length is 100, it has 7 lines, and the cursor is at line 7, column 2. The encoding is set to ANSI as UTF-8.

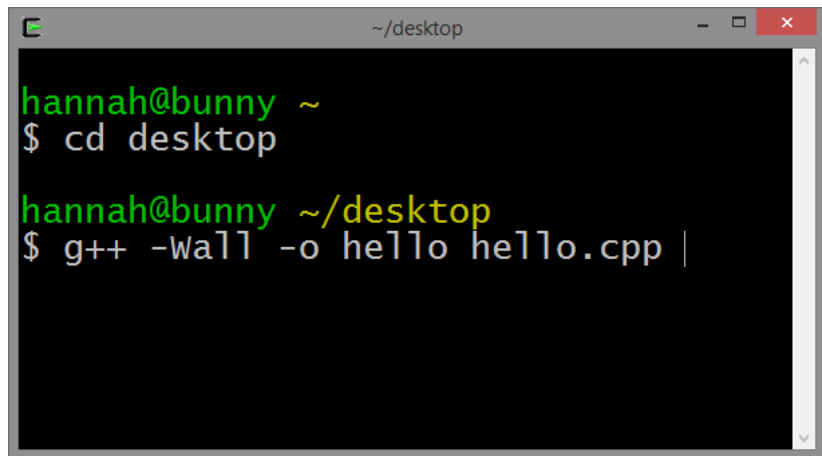
Hello World: cd



```
hannah@bunny ~  
$ cd desktop  
  
hannah@bunny ~/desktop  
$ |
```

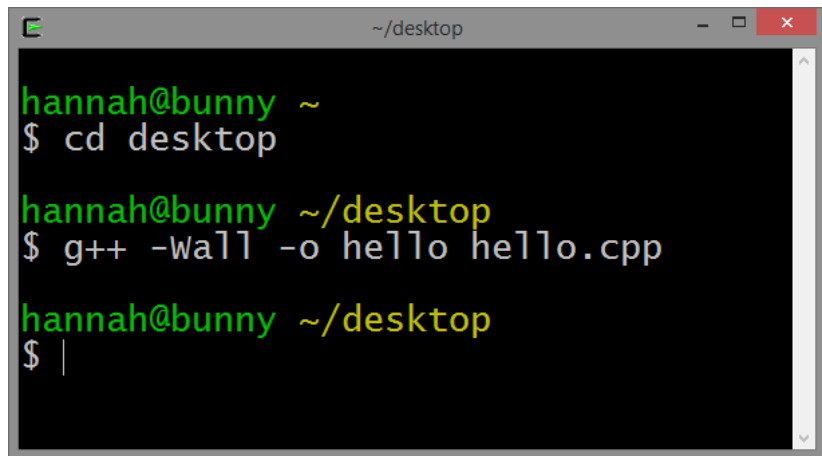
A terminal window with a grey title bar containing a green icon, the text `~/desktop`, and standard window controls. The terminal has a black background with green text for the prompt and yellow text for the current directory. The first prompt is `hannah@bunny ~`, followed by the command `$ cd desktop`. The second prompt is `hannah@bunny ~/desktop`, followed by a dollar sign and a vertical cursor `$ |`. A vertical scrollbar is visible on the right side of the terminal window.

Hello World: Compile

A terminal window with a grey title bar containing a green icon, the text '~ /desktop', and standard window controls. The terminal has a black background with green text for the prompt and yellow text for the current directory. The commands entered are 'cd desktop' and 'g++ -Wall -o hello hello.cpp |'.

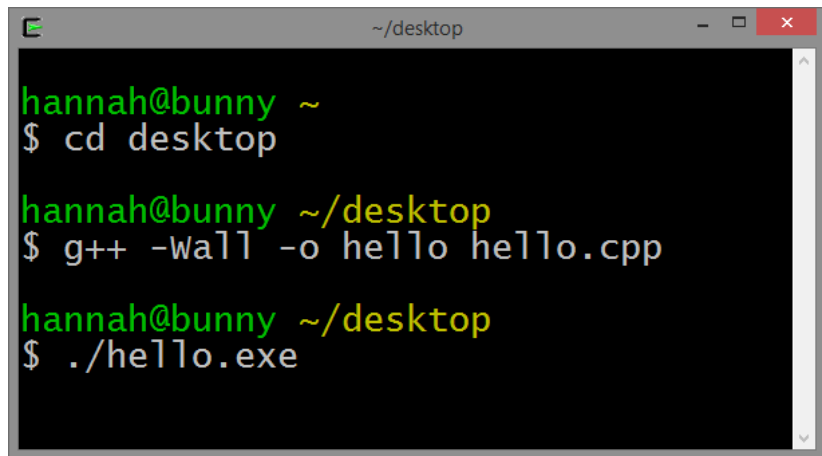
```
hannah@bunny ~  
$ cd desktop  
  
hannah@bunny ~/desktop  
$ g++ -Wall -o hello hello.cpp |
```

Hello World: Compiled

A terminal window with a grey title bar containing a green icon, the text "~/desktop", and standard window controls. The terminal has a black background with green text for the prompt and yellow text for the current directory. The text inside the terminal shows a sequence of commands: changing to the desktop directory, compiling a C++ file named hello.cpp with g++ and -Wall flag, and then a new prompt line with a cursor.

```
hannah@bunny ~  
$ cd desktop  
  
hannah@bunny ~/desktop  
$ g++ -Wall -o hello hello.cpp  
  
hannah@bunny ~/desktop  
$ |
```

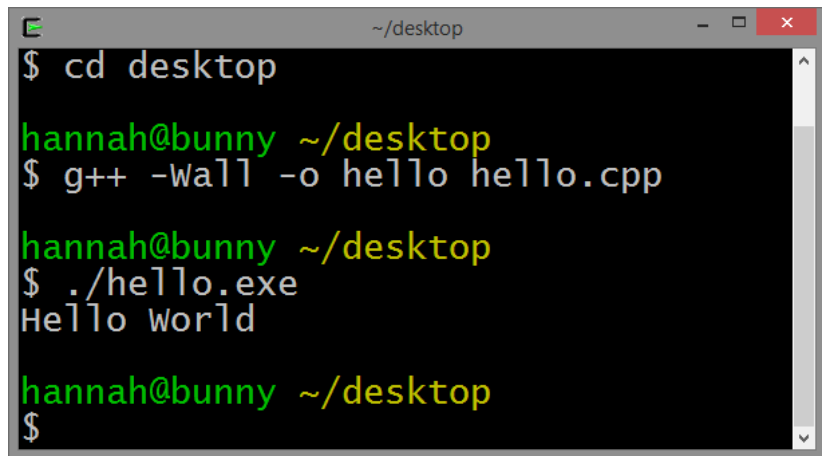
Hello World: Execute



A terminal window titled "~/desktop" with standard window controls (minimize, maximize, close). The terminal shows a user named hannah@bunny navigating to the desktop directory, compiling a C++ file named hello.cpp with g++ using the -Wall flag, and then running the resulting executable hello.exe. The prompt changes to ~/desktop after the first two commands.

```
hannah@bunny ~  
$ cd desktop  
  
hannah@bunny ~/desktop  
$ g++ -Wall -o hello hello.cpp  
  
hannah@bunny ~/desktop  
$ ./hello.exe
```


Hello World: Execute



```
~/desktop
$ cd desktop

hannah@bunny ~/desktop
$ g++ -Wall -o hello hello.cpp

hannah@bunny ~/desktop
$ ./hello.exe
Hello world

hannah@bunny ~/desktop
$
```