

Technical Informatics I

Introduction to Programming

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Technical Informatics 1: Dr Fatimah

Introduction to Programming

- Aims
 - Introduce students to the basics of programming
 - Introduce students to standard functions: `printf()`, `scanf()`
- Expected Outcomes
 - Students are able to understand how to construct simple C programs that can display formatted data using `printf()`
 - Students understand the use of the functions `printf()` and `scanf()`
 - Students are able to perform good comments
- References
 - Harry H. Cheng, 2010. C for Engineers and Scientists: An Interpretive Approach, McGraw Hill



Content

- Introduction to Programming
- Introduction to ChiDE's GUI
- Programming basics
- Introduction to printf() and scanf()
- Executing a program
- Conclusion

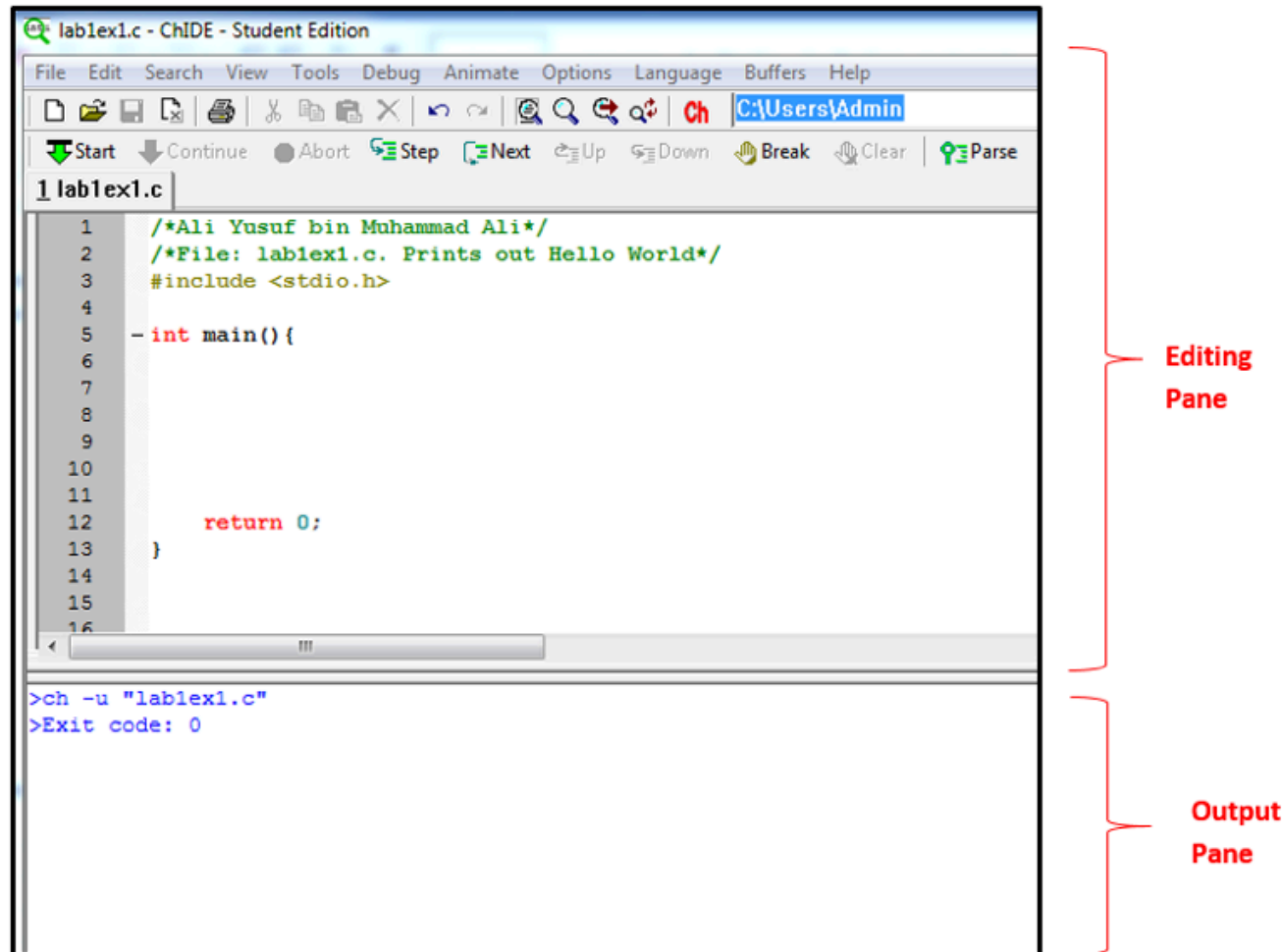


Introduction to ChiDE's GUI

- In this course we shall be using ChiDE as our platform
- It is a user-friendly Integrated Development Environment (IDE) for beginners to learn computer programming in C/C++
- You may download the software for FREE at:
<https://www.softintegration.com/docs/ch/chide/>



Introduction to ChiDE's GUI



Introduction to ChiIDE's GUI

- Editing Pane:
 - allows you to edit and write C/Ch/C++ programs within the IDE
- Output Pane:
 - This is where the output of your program will appear

Programming Basics

- Each time you write a C program, you need to include the following lines

```
1 lab1ex1.c *  
1  
2 #include <stdio.h>  
3  
4 - int main() {  
5  
6  
7  
8  
9  
10  
11 return 0;  
12 }
```

Commenting

- Commenting is a good practice in Programming
- It makes it easier for others to understand your program
- Comments start with `/*` and terminated with `*/`.
- You may write anything in between.

```
1  /*Ali Yusuf bin Muhammad Ali*/  
2  /*File: lab1ex1.c. Prints out Hello World*/  
3  #include <stdio.h>  
4  
5  - int main() {  
6  
7  
8  
9      return 0;  
10 }  
11  
12  
13
```


#include <stdio.h>

- #include in line 3 tells the computer to load contents of a header file
- <stdio.h> allows standard input/output operations (eg: printf() and scanf())

```
1  /*Ali Yusuf bin Muhammad Ali*/  
2  /*File: lab1ex1.c. Prints out Hello World*/  
3  #include <stdio.h>  
4  
5  - int main() {  
6  
7  
8  
9      return 0;  
10 }  
11  
12  
13
```

int main()

- All C programs *must* contain a **main** function

- int

- Implies that the main function *returns* an integer value

- Paranthesis ()

- Indicates a function

- Starts with a left brace {

- Indicates the start of the function

- Ends with a right brace }

- Indicates the end of the main function

- return 0

- Return: is the way C exits a function
 - Here, a return 0 indicates that the program has exited normally

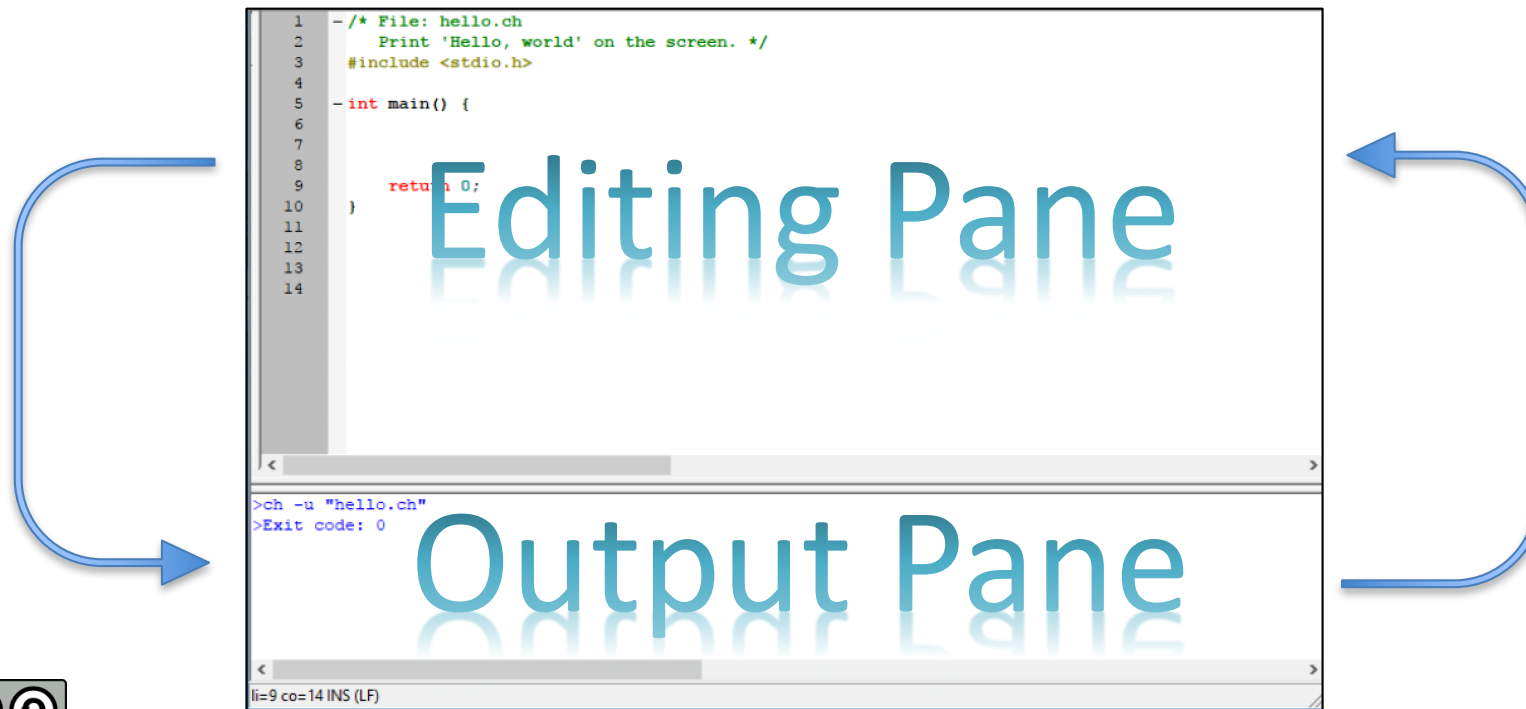
```
1  /*Ali Yusuf bin Muhammad Ali*/
2  /*File: lab1ex1.c. Prints out Hello World*/
3  #include <stdio.h>
4
5  - int main(){
6
7
8
9      return 0;
10 }
11
12
13
```

Functions `printf()` and `scanf()`

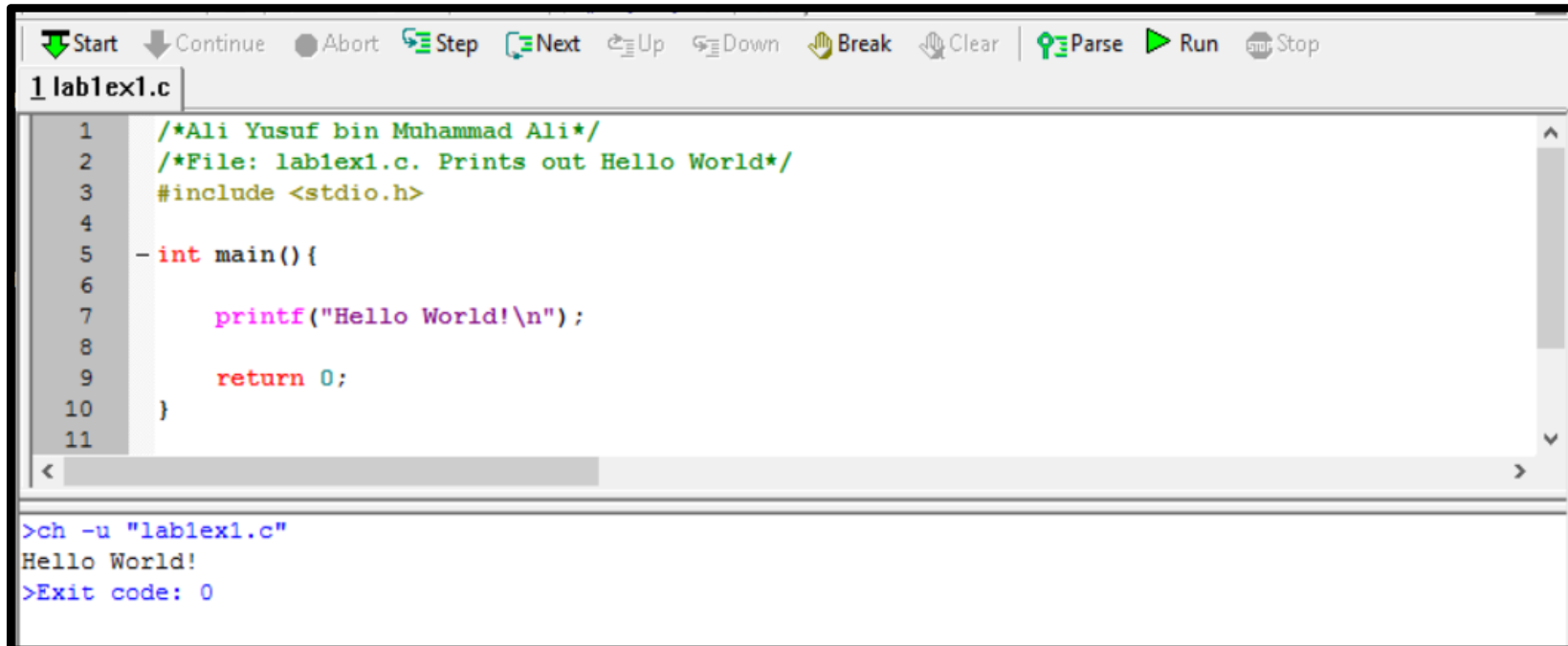
- `printf()` and `scanf()` functions are inbuilt library functions in C.
- These functions are declared and defined in `stdio.h` which is a header file in C.
- In order to use `printf()` and `scanf()` functions, we have to include `stdio.h`

Functions `printf()` and `scanf()`

- `printf()`
 - displays output
 - (editing pane -> output pane)
- `scanf()`
 - take input from users
 - (output pane -> editing pane)



A simple C program using printf()



The screenshot shows a C program editor window with a toolbar at the top containing buttons for Start, Continue, Abort, Step, Next, Up, Down, Break, Clear, Parse, Run, and Stop. The file name is 'lab1ex1.c'. The code is as follows:

```
1  /*Ali Yusuf bin Muhammad Ali*/  
2  /*File: lab1ex1.c. Prints out Hello World*/  
3  #include <stdio.h>  
4  
5  - int main() {  
6  
7      printf("Hello World!\n");  
8  
9      return 0;  
10 }  
11
```

Below the code editor is a terminal window showing the execution results:

```
>ch -u "lab1ex1.c"  
Hello World!  
>Exit code: 0
```

Executing a program in C

1. Run the code



```
1  /*Ali Yusuf bin Muhammad Ali*/
2  /*File: lab1ex1.c. Prints out Hello World*/
3  #include <stdio.h>
4
5  -int main(){
6
7      printf("Hello World!");
8
9      return 0;
10 }
11
```

>ch -u "lab1ex1.c"
Hello World!>Exit code: 0

2. Output from printf()

Conclusion

- Conclusion #1
 - A C program must always start with:

```
1 lab1ex1.c *  
1  
2     #include <stdio.h>  
3  
4 - int main() {  
5  
6  
7  
8  
9  
10  
11         return 0;  
12     }
```

- Conclusion #2
 - printf()
 - displays output
 - (editing pane -> output pane)
 - scanf()
 - take input from users
 - (output pane -> editing pane)



Technical Informatics I

Lecture 1

Dr Fatimah



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