

ENEE 140 Lab 2

Lab instructions

This handout includes instructions for the recitation sessions on Wednesday and Friday. **Follow these instructions** to familiarize yourself with the GRACE environment, then **submit the homework** as indicated below. To prepare for the next lecture, complete the **reading assignment** and try to solve the **weekly challenge**.

1 UNIX tutorials

Read the introduction and tutorials 1 and 2 at <http://www.ee.surrey.ac.uk/Teaching/Unix/>. It is best to do this before the recitation and use these tutorials as a reference for the rest of the semester.

2 GRACE class public directory

We will post sample code that will be used in the lectures and recitations in a directory (GLUE class public directory) that you all can access. Create a short cut (or link) to that directory following the instructions below:

1. Go to the ENEE140 directory in your GLUE account
2. Type in the following command:

```
ln -s /afs/glue.umd.edu/class/spring2015/enee/140/0101/public public
```

This will create a symbolic link named “public” to the class public directory, which you can access as a regular directory by typing:

```
cd public           from your ENEE140 directory
cd ~/ENEE140/public from any other directory
```

Question 1: Think about how the working directory changes in the second case. Draw the hierarchical directory structure if that helps. What does ~ do?

3. You can copy files from the public directory to your own directory.

For example, if you want to copy the solution to the previous week’s challenge (located under **code/week02** in the class public directory) and store it at **ENEE140/Lab/Week02**, and assuming that you are in the **ENEE140/** directory of your GRACE account and want to remain at this directory after the file copying, you can do the following:

```
cd public/code/week02           go to class public directory
cp temperature_conversion.c ~/ENEE140/Lab/Week02/  copy file to another directory
cd ~/ENEE140                     come back to ENEE140
```

If you want to rename the file at its new location—for example `myconverter.c`—add the new name after the destination directory:

```
cp temperature_conversion.c ~/ENEE140/Lab/Week02/myconverter.c
```

You can also use a single command to achieve the effect of the three commands above:

```
cp public/temperature_conversion.c Lab/Week02/
(remember that you are now in your own ENEE140 directory)
```

Question 2: think about how this works.

- Exit the public directory

From the public directory, the command `cd ..` will not take you back to your `ENEE140/` directory; instead, you have to do `cd ~/ENEE140`.

Question 3: Why doesn't `cd ..` take you to your `ENEE140/` directory? Where does it take you to? Think about this and check using the `pwd` command (print working directory) after `cd ..`

3 The `submit` command

The GRACE system provides a simple `submit` command that allows you to submit your work to the teaching staff. If you want to submit the file `hello_world.c`, follow the steps below:

- Go to the directory where file `hello_world.c` is located
- Type in the following command

```
submit 2016 spring enee 140 AAAA B hello_world.c
```

Note: replace `AAAA` with your section number and `B` with an assignment number, as follows:

- Homeworks are numbered 1–15.
- Projects 1, 2, and 3 are numbered 101, 102, and 103, respectively.
- Weekly challenges are numbered 1001, 1002, ...

This command takes one file at a time. To submit multiple files, you have to add them to an archive file and submit this file (ask with your TA if you have any questions about this). To learn more about the `submit` command, log into GRACE, type `submit` and read the information provided on the screen.

Homework

Due: February 5 at 11:59 pm.

Create a file called `temperature_conversion_header.c` by following the instructions below. Submit it using the following command:

```
submit 2016 spring enee 140 AAAA 2 temperature_conversion_header.c
```

Note: you must replace **AAA** with your own section number (0101, 0102, etc.)

1 Table header

Modify the Celsius - Fahrenheit conversion program to print a header above the table. For example, instead of:

```
Celsius: -100 Fahrenheit: -148.0  
Celsius:  -90 Fahrenheit: -130.0  
Celsius:  -80 Fahrenheit: -112.0  
...
```

your program should output:

```
Celsius  Fahrenheit  
-100    -148.0  
-90     -130.0  
-80     -112.0  
...
```

Pay attention to the alignment of the numbers with the header in each column.

Reading assignment

K&R Chapters 1.3, 1.5, 2.1, 2.6, 3.1, 3.2

Weekly challenge

Write a program that reads its input character-by-character (like the example on page 20 of the textbook) and that prints what it has read one word per line. For example, if the input is

```
ENEE 140 is awesome!
```

the output should be:

```
ENEE
140
is
awesome!
```

You can start from the following template (also available in the GRACE class public directory, at `/afs/glue.umd.edu/class/spring2016/enee/140/0101/public/challenges/week02/word_per_line.c`):

```
//
// Print the input one word per line.
// K&R Exercise 1-12.
//

#include <stdio.h>
int
main()
{
    int c;
    return 0;
}
```

The weekly challenge will not be graded. However, if you manage to solve it, you may submit it for extra credit. The deadline for submitting your solution to the weekly challenge is **Monday at 11:59 pm**. To be eligible for extra credit, you must implement correctly **all but two** of the weekly challenges. You can submit your program from a GRACE machine using the following command (replace **AAAA** with your section number):

```
submit 2016 spring enee 140 AAAA 1002 word_per_line.c
```