FEEG6002 Advanced Computational Methods 1:

Laboratory-Assignment 1

Contents

We ask you to submit your work by attaching your programs to an email which you send to feeg6002 at two points during the laboratory session.

Prerequisites: C program skeleton, printf, int,

1 Write a Hello World program

1. Use Quincy (or another other C compiler and editor you are familiar with) to write, compile and execute a Hello world program which prints "Hello World" and the new line character to the standard output (stdout). Save the file as hello.c.

In other languages, these codes read:

Matlab:

```
fprintf('Hello World\n')
```

Python:

```
print("Hello World")
```

2 Submit your file for feedback

Attach the file hello.c to an email which you send to feeg6002@soton.ac.uk with the subject line training 1.

You should get automatic replies within a few minutes, which

- confirm receipt of your file and
- provide an assessment of the work. This does not contribute to the module mark but provides feedback to you about your work.

You can re-submit your code for the training exercise as often as you like, and thus you can improve your code until it works perfectly.

Final checks before you submit:

- does your c-program compile at all? This is important: if we can't compile it, it does not work, so we can't award any points.
- does the program compile without warnings and errors? Points available for correct compilation will be halved for every warning and every error that is reported.

  As recommended, we use the switches -ansi -pedantic -Wall for the compilation with gcc.

If you have trouble understanding the feedback messages, please approach a demonstrator for help.

3 Experiment with printf

1. Write a program (in file printf.c) that declares a floating point variable x of type float and an integer i of type int. Your program should use the printf command to print the values of i and x exactly as shown here including the new line character at the end of both lines:

i=42
x=3.10

We provide Matlab and Python sample code which produces exactly the output shown above.

Matlab:

```
i=int32(42);      %request 32-bit integer type for 42
x=3.1;            %all numbers are float by default
fprintf('i=%d\n',i);
fprintf('x=%4.2f\n',x);
```

Python:

```
x = 3.1 # a (double) float
i = 42  # an integer
print("i=%d" % i)
print("x=%.2f" % x)
```

2. Write a new program (and save as printfwhat.c) which defines an integer variable i and includes and executes the line:

i=printf("What am I doing?\n");

What is the meaning of the variable i here? Try to print the value of i after the statement above to find out. When you have found the answer, add the answer as a documentation comment to your program printfwhat.c. (You can leave the line i=printf("What am I doing?\n"); in your program printfwhat.c.)

4 Submit

Before you submit your files printf.c and printfwhat.c, check that they compile, and that they compile without warnings.

Then submit your files as attachments

- printf.c,
- printfwhat.c

to an email to feeg6002@soton.ac.uk. Use lab 1 as the subject line.

The receipt of your files will be confirmed by email, and the files will be tested for correct functionality and compilation without warning. You will then receive feedback similar to the training 1 exercise above.