

Computer Science 1MC3

Lab 2 – Variables and Data Types

In this lab we will be learning about the different types of data types in C and how we can use them. But before we do this let us review they different types of numbers we can have in math.

\mathbb{R} = $\{-\infty, \infty\}$ or real numbers.

\mathbb{Z} = $\{\dots -1, 0, 1 \dots\}$ or integers

there are also complex numbers but we won't concern ourselves with these.

Now in C we can also store and manipulate real and integer numbers but we must abide by the syntax of the language. Say we want to hold an integer value we would declare a variable like this.

```
/1/      #include <stdio.h>
/2/
/3/      int main( void ) {
/4/
/5/          int x;
/6/
/7/          x=7;
/8/
/9/          return 0;
/10/
/11/     }
```

Line 5 is what is known as the variable declaration. It is essentially telling the computer to prepare memory for it to be held in. Naturally a real number would require more memory then an integer so this is why we have to do this. This declaration must be done before any other code is written otherwise you'll get an error message. This said lets manipulate the value of some variables.

Run the following code and write down the answers in the space provided.

```
#include <stdio.h>

int main(void) {

    int intx=7, inty=5;
    double realx=7, realy=4;
```

```
printf("intx value is %d",intx);
preintf("%real x value is %f",realx);

return 0;

}
```

Questions:

1. What is the function of %d in and %f in the print command?
2. If I ran the same program except before I reached the print command I inserted the line

```
intx = intx + inty;
```

What would be printed?

3. What would happen if we had

```
intx = realx;
```

in our code?

4. What would happen if we had

```
realx = intx;
```

in our code?

5. What's the largest integer number you can print?