# Pre-Lab #1: Data Types, Expressions, and Assignment

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L2D
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# Learning Goals

1. Choose appropriate data types for variables (e.g. int, double)
2. Express commonly used engineering formulas in C
3. Write a program that prompts the user for some input, performs some basic calculation(s), and prints a result on the screen (recall printf, scanf)
4. Write a program using elements of good programming style

# Some Characteristics of Good Programming Style

- Opening documentation included
- Descriptive variable names
- Alignment and spacing
- Appropriate use of comments
- Use of defined constants (especially useful in this lab for any formulaic constants)

# Which Code Has Better Style?

```
#include <stdio.h>
#include <stdlib.h>
int main(void) {
int meters;
int num;
scanf("%d", &meters);
num = meters/ 400;
printf("%d", num);

system("PAUSE");
return 0;
}
```

```
/*
 * Author: Example Student
 * Purpose: Given a running distance in meters, print the [min.] number of
 * lengths of a running track run
 */

#include <stdio.h>
#include <stdlib.h>

#define LENGTH_RUNNING_TRACK 400

int main(void) {
        int distanceInMeters;
        int numTrackLengths;

        printf("Please enter your running distance in meters:\n");
        scanf("%d", &distanceInMeters);

        numTrackLengths = distanceInMeters / LENGTH_RUNNING_TRACK;

        printf("You ran %d length(s) of a running track.", numTrackLengths);

        system("PAUSE");
        return 0;
}
```

# Steps for Writing Programs

1. Understand the problem
2. Think through your algorithm
3. Come up with a test suite (both valid inputs and edge cases)
4. Code your algorithm
5. Test your algorithm