CSCI 10: Introduction to Computer Science
Fall 2016 — Michael J. Bannister

Midterm Exam 1

October 10, 2016

all problems are of equal value

Name (please print): _____

Student ID: _____

Problem 1: In this problem you will be converting numbers between decimal and binary representation. You must show your work for full credit.

Part A: Convert the binary number 1101011 to decimal.

Part B: Convert the decimal number 70 to binary.

Problem 2: What is the output of the following C++ program? Please box your answer to separate it from your work.

```
#include <iostream>

using namespace std;

int main() {
    int a = 1;
    int b = 3;
    int c = 5;

    cout << a + b * c << "\n";
    cout << c % 3 << "\n";
    cout << a++ << "\n";
    cout << a << "\n";

    if (5 < b || b < 10) {
        cout << "YES\n";
    } else {
        cout << "NO\n";
    }

    for(int i = 0; i < 4; i++) {
        cout << i % 2 << "\n";
    }

    return 0;
}
```

Problem 3: Write a C++ program that takes as input the radius of a circle and prints its area. Your program must print an error message if the input radius is negative. Recall, the area of a circle can be computed with the formulas:

$$A = \pi r^2 \qquad \text{and} \qquad \pi \approx 3.14$$

Example: If the user enters `2.0`*, then the program prints* `12.56`*.*

Problem 4: Write a C++ program that takes as input three numbers and prints the sum of the two largest values. You may not use built-in library functions, such as `min` and `max`.

Example: If the user enters `3 3 7`, then the program prints `10`.

Problem 5: Write a C++ program that uses a for-loop to print your name 100 times. Each time you print your name it must be on its own line. *Note: This program does not take any input from the user.*