

# Programming I

## Lab 4

**For exercises 1 and 2, type your answers in a single text file. For each of exercises 3 and 4 submit a .java file. Your submission is due on the Labdata drive.**

1. What is the output of the following code segments? Do this exercise without the help of a computer.

### Segment 1

```
int i = 0;
while (i < 10)
{
    System.out.print(i + " ");
    i++;
}
output: _____
```

### Segment 2

```
int i = 0;
while (i <= 10)
{
    System.out.print(i + " ");
    i = i + 2;
}
output: _____
```

### Segment 3

```
int i = 10;
while (i > 0)
{
    i--;
    System.out.print(i + " ");
}
System.out.println("done.");
output: _____
```

### Segment 4

```
int i = 10;
while (i < 0)
{
    i--;
    System.out.print(i + " ");
}
System.out.println("done.");
output: _____
```

### Segment 5

```
int i = 10;
while (i + 1 > 0)
{
    i--;
    System.out.print(2 * i + " ");
}
output: _____
```

2. For each of the following series, write a `while` loop that computes the sum. You do not need to submit complete Java programs, just the code segments corresponding to each. Note that the sum in some cases should be a decimal value.

$$1 + 3 + 5 + \dots + 99$$

$$1/2 + 1/3 + 1/4 + \dots + 1/99$$

$$1/2 + 1/4 + 1/6 + \dots + 1/100$$

$$1/2 + 2/3 + 3/4 + \dots + 99/100$$

$$1/2 - 2/3 + 3/4 - 4/5 + \dots + 99/100 \quad (\text{challenge question})$$

3. Write a program that first creates a `Board` object with 100 columns and 1 row. Using 2 `while` loops, color alternating cells using red and yellow. The first cell is red.
4. Use the animation example (`Animate2`) developed above to come up with your own animation that uses a loop. Push your creativity.