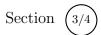
CSC 1350 Pre-Exam # 2



October 10, 2019

NAME:

- Read the instructions before beginning the exam.
- Blue book is required. Fill in the information on the cover of your blue book and on the exam sheet.
- Answer all exercises in your blue book.
- Calculators are not allowed.
- Use the back of the exam sheets if you need scratch paper.
- Turn in the exam and your blue book before you leave.

DURATION: 80 Minutes

Table 1: Distribution of Points

PART	WORTH	SCORE
Written	100	/100

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.

1 Exercises

Instruction: Read each question carefully before providing an answer.

A. Consider the array declaration below. Give the value of each expression.

```
int[] list = {1, 3, 1, 2, 1, 2, 0};
(a) list[3] [5 points]
(b) list[1] + list[2] [5 points]
(c) list[list[0] + list[1]] [5 points]
```

B. What would the code segment in *Listing* 1 output?

Listing 1: Code Segment

```
static final int SIZE = 7;
int[] sequence = new int[SIZE];
int i;
sequence[0] = 0;
sequence[1] = 1;
for (i=2; i < sequence [i-1] + sequence [i-2];
system.out.println(Arrays.toString(sequence));</pre>
```

C. Consider the code segment in *Listing* 2. What would it output?

Listing 2: Code Segment

```
int i = 0, j;
3
       while (i < 3)
4
          j = 1;
5
          while (j <= 3)
6
7
              if ((i + j) % 2 == 0)
8
                 System.out.print("[0]");
9
10
                 System.out.print("[X]");
11
              j++;
12
          }
13
          System.out.println();
14
15
       }
```

D. What would the code segment in *Listing* 3 output? [15 points]

Listing 3: Code Segment

```
1
       int n = 8;
2
       int denom = 1;
3
       int i = 2;
4
5
       System.out.printf("pi[%d] = 4[1",n);
6
       {
7
           denom = denom + 2;
8
           if (i\%2 == 0)
9
              System.out.printf(" - 1/%d",denom);
10
11
              System.out.printf(" + 1/%d",denom);
12
          i++;
13
       }while(i <= n);</pre>
14
       System.out.println("]");
```

E. What would the code segment in *Listing* 4 output?

Listing 4: Code Segment

```
int[] numbers = {1, 2, 3, 4, 5};
2
       System.out.println(Arrays.toString(numbers));
3
       int[] numbers2 = new int[2*numbers.length];
4
5
       for (i = 0; i < numbers.length; i++)</pre>
6
          numbers2[i] = numbers[i];
7
       numbers = numbers2;
       System.out.println(Arrays.toString(numbers));
9
       for (i = numbers.length/2; i < numbers.length; i++)</pre>
          numbers[i] = numbers[i - numbers.length / 2];
10
11
       System.out.println(Arrays.toString(numbers));
```

F. Consider the code segment in *Listing* 5.

Listing 5: Code Segment

```
1    int i = 2;
2    System.out.printf("{%d ",i);
3    for (i = 4; i < 10; i++)
4    {
5        if (i % 2 == 0)
            System.out.printf(" ,%d",i);
7    }
8    System.out.println("}");
```

- (a) How many iterations will this code segment make?
- (b) How many comparisons are made during the execution of this code segment? [3 points]
- (c) What would the code segment output? [5 points]
- (d) Rewrite the for-loop in the code segment without the use of the ifstatement so that the output remains the same? [5 points]
- (e) How many iterations will the revised version of the code segment make? [2 points]
- (f) How many comparisons will the revised version of the code segment make? [3 points]
- (g) Is the revised version more efficient than the original? Why or why not? [5 points]
- G. Given a positive integer $n \ge 1$, write a loop that generates and computes the following alternating series. [5 points]

```
1 - 2 + 3 - 4 + 5 - 6 + 7 \dots n = \dots
```

H. What would the code segment in *Listing* 6 output?

Listing 6: Code Segment

```
int i;
2
   for (i = 0; i < 9; i++)
3
       int length = i + 1;
4
5
       if (i >= 4)
          length = 9 - i;
6
7
       int j = 0;
8
       while (j < length)</pre>
9
10
           System.out.printf("%2d",j+1);
11
           j++;
12
       System.out.println();
13
14
```