CSC116 EXAM 2 REVIEW

GINA BAI

Logistics

- Next Tuesday, June 29, 12AM – 11:59PM
- 110 minutes
  - Set a timer for yourself
  - Moodle will display a countdown timer and close/submit your exam after 110 minutes
- via Moodle
  - **Attempts allowed: 1**
- Open textbook, Open notes.
  - *You are not allowed to use any other external resources.*
  - *You are not allowed to run the code on computers/websites.*

Preparing for Exam 2

- Review the learning objectives
  - Exam 2 Study Guide – Learning Objectives
- Review the lecture videos and slides
  - If you do not fully understand a topic, read the related textbook section
  - Post on piazza, or attend office hours to ask additional questions/clarifications
    - Monday, 12 – 2pm
- Review (and possibly rewrite) the lab exercises
- Complete the homework 2

Technical Issue? Emergency?

If there are any technical issues while you are completing the exam, you are required to notify your instructor **immediately** by email to clearly describe what happened.

We will NOT provide any accommodations for any technical issues that are reported after the exam period has ended.

Overview

- Loops
  - while loops
  - do-while loops
  - for loops
  - for-each loops
- Arrays
  - Declaration
    - 2-phase Initialization
  - Traversal
  - Modification
  - Arrays class
  - Array as parameter
  - Array as return type
- Unit & Integration Testing
  - Loops
  - Arrays
  - Assertions (lecture 8)
  - assert methods

Practice

Midterm Exam 2 (Lectures 7 - 13, zyBook Chapters 5 - 7)

- Exam Review - 06/23/2021 (NO CLASS on 06/24/2021)
- Exame Date - 06/29/2021


Exam 2 - in-Class Practice

Exam 2 - in-Class Practice

Attempts allowed: 1

The quiz will not be available until Wednesday, June 23, 2021, 3:20 PM

This quiz will close on Wednesday, June 23, 2021, 5:10 PM.

Practice – while loop & do-while loop

Q: Give the output for each of the loops below:

```
int x = 250;
while (x % 3 != 0) {
    System.out.print(x + " ");
    x /= 2;
}
```

250 125 62 31

```
int x = 100;
do {
    System.out.print(x + " ");
    x += 10;
} while (x < 100);
```

100

Practice – for loop

Produces the following output with (nested) for loops.

1, 4, 16, 64, 256, 1024, 4096

Sample solution:

```
int val = 1;
for (int i = 0; i < 7; i++) {
    System.out.print(val);
    if(i != 6){
        System.out.print(", ");
    }
    val *= 4;
}
```

Practice – for loop

Q: How many times is the print statement in the following loop executed?

```
for (int x = 1; x < 10; x += 2) {
    for (int y = x / 2; y >= 2; y /= 2) {
        System.out. println("Print Me!");
    }
}
```

4 times

x = 1, x < 10? Yes
  y = x/2 = 0, y >=2 ? No

x = 3, x < 10? Yes
  y = x/2 = 1, y >=2 ? No

x = 5, x < 10? Yes
  y = x/2 = 2, y >=2 ? Yes
    print
  y = y/2 = 1, y >= 2? No

x = 7, x < 10? Yes
  y = x/2 = 3, y >=2 ? Yes
    print
  y = y/2 = 1, y >= 2? No

x = 9, x < 10? Yes
  y = x/2 = 4, y >=2 ? Yes
    print
  y = y/2 = 2, y >= 2? Yes
    print
  y = y/2 = 1, y >= 2? No

x = 11, x < 10? No

Practice – Array

Q: Implement a method called palindrome to check if a string (stored as an array of chars) is a palindrome (meaning it has the same series of strings forwards and backwards, e.g., [a, b, c, b, a])?

```
public static void main(String[] args) {
    char[] inputChar1 =  {'a', 'b', 'c', 'b', 'a'};
    System.out.println(palindrome(inputChar1));
    char[] inputChar2 =  {'a', 'b', 'B', 'A'};
     System.out.println(palindrome(inputChar2));
}
```

Sample solution:

```
public static boolean palindrome(char[] input) {
    boolean isPalindrome = true;
    for (int i = 0; i <= input.length / 2 && input.length != 0; i++) {
        if (input[i] != input[input.length - i - 1]) {
            isPalindrome = false;
            break;
        }
    }
    return isPalindrome;
}
```

Challenge – nested for loop

Q: Produces the following output with (nested) for loops.

∗1∗21∗321∗4321∗54321

∗1∗21∗321∗4321

∗1∗21∗321

∗1∗21

∗1

Sample solution:

```
for (int row = 5; row >= 1; row--){
    for (int part = 1; part <= row; part++) {
        System.out.print("*");
        for (int val = part; val >= 1; val--) {
            System.out.print(val);
        }
    }
    System.out.println();
}
```