

CMSC 133 Quiz 2 Worksheet

The next quiz for the course will be on Mon, Feb 24. The following list provides additional information about the quiz.

- The quiz will be a written quiz (no computer).
- **The quiz will be in lecture.**
- Closed book, closed notes quiz.
- Answers must be neat and legible.
- The quiz has a maximum duration of 20 minutes.
- Quiz instructions can be found at <http://www.cs.umd.edu/~nelson/classes/utilities/examRules.html>
- You must take your quiz in your lecture session and not show up to a random one. We will not grade quizzes taken in the incorrect section.
- Please do not discuss a quiz after you have taken it.
- Piazza will be closed on days quizzes take place.
- **Regarding Piazza** - Feel free to post questions in Piazza regarding the worksheet and possible solutions to problems.

The following exercises cover the material to be included in this quiz. Solutions to these exercises will not be provided, but you are welcome to discuss your solutions with the TAs or instructor during office hours. It is recommended that you try these exercises on paper first (without using the computer).

Exercises

1. What is the difference between a static method and a non-static method?
2. When you should define a method as static?
3. What is the difference between a non-static field and a static field?
4. What does "this" represent in a class method?
5. Does a constructor for a class constructs the object?
6. Can an object live in the stack?
7. When are parameters and local variables created and destroyed?
8. What is the default value for reference and primitive type instance variables?
9. What is the default value for reference and primitive type local variables?
10. What is an immutable class?
11. Draw a memory map (as we did in lecture) that illustrates the stack and heap when the program execution reaches the point identified by `/* HERE */`. The format for memory map you need to use is described at:

<https://www.cs.umd.edu/~nelson/classes/resources/cmsc131/SampleMemoryMap.pdf>

```
public class Treasure {
    private String pirate;
    private int coins;

    public Treasure(String pirate, int coins) {
        this.pirate = pirate;
        this.coins = coins;
    }
    public void setCoins(int coins) {
        this.coins = coins;
    }
    public int getCoins() {
        return coins;
    }
    public String toString() {
        return "Treasure [pirate=" + pirate + ", coins=" + coins + "];"
    }
}
```

```

public class Driver {

    public static void process(Treasure c) {
        c.setCoins(2 * c.getCoins());
        /* HERE */
        System.out.println(c);
    }

    public static void search(Treasure a, int b) {
        int total = b + 10;

        b = 0;
        a.setCoins(total);
        process(a);
    }

    public static void main(String[] args) {
        int amount = 200;
        Treasure t1 = new Treasure("Pirate1", amount);

        search(t1, 3);
    }
}

```

12. Previous quiz (and solution):

- a. <http://www.cs.umd.edu/class/spring2020/cmsc133/quizzes/quiz2/PreviousQuiz.pdf>
- b. <http://www.cs.umd.edu/class/spring2020/cmsc133/quizzes/quiz2/PreviousQuizSoln.pdf>