**Lab Report 02**

**For this lab, ­­­we were given a problem of velocity, distance, and acceleration of a ball. In it, we are supposed to determine the distance the ball travelled from one point to another and its velocity once it reached that point, given its initial velocity, time it took to travel between the two points (in seconds) – both determined by the user – and acceleration due to gravity In order to calculate the requested values, the user must first input the values for the ball’s initial velocity (s) and the time it travelled (t). These values – as well as the ball’s acceleration (a) – are then plugged into the formulas v = u + at and S = ut + ½at­2 – where a is 9.8m/s2 – to computate the final velocity (v) and distance travelled (S) of the ball.**

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**As shown, the program will execute properly for this instance because both values inputted are integers, which is valid within the code.**

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**The program will fully execute for this instance as well because decimal values are valid for the velocity of the ball.**

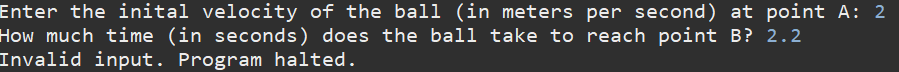
**A screen shot of a computer program

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**For this instance, however, attempting to run the program will produce an error because decimal values are NOT a valid input for the time of the ball. The program explicitly asks the user to input the value for time elapsed in seconds.**

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**In order for the program to halt instead of producing an error, in this case, a conditional statement – shown above – can be used to check if the user input value for time is an integer.**

**This lab served as a way to show how user-created objects can be used for arithmetic, sentence printing, and input validation. If I had known how, I would have also implemented input validation for if the users enters a string instead of a number. I tried using a try-catch conditional and an instanceof operator, but neither worked for me.**

Additional Questions:

1. **How should a programmer decide if a value must be stored as a constant or a variable?** It is usually determined by it they want it to be modifiable at some point in the program or not and by if it is important
2. **What are some of the problems that might arise if integers were used to solve the programming task(S) in Lab-2?** The program would not be able to take ‘double’ data inputs or output them
3. **Write a single print statement in Java that displays the words Monday, Tuesday, Wednesday, Thursday, Friday, Saturday and Sunday each on its own line.**

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1. **Analyze the code below:** 
   1. **String message = “Java”+””+”is+””fun”; System.out.println(message); ◦** 
      1. **Does it contain any errors? If yes, fix the code, otherwise do nothing.** String message = “Java” + “” + “is” + “” + “fun”; System.out.println(message);
      2. **What is the output produced by the above statements?** “Javaisfun”
2. **Expand the term – RAM.** Random Access Memory
3. **Explain the difference between the methods next() and nextLine().** Next looks at the next word (or set of letters until a space) and nextLine reads the entire line typed by a user
4. **What is the process of eliminating errors in your Java program called?** Debugging