

Lab - 2

Objective: A ball travels from point A to point B. The ball has an initial velocity(u) at point A and then its velocity changes at a uniform rate from point A to point B in time(t). In other words, there is a uniform acceleration(a) from point A to point B. What is the distance(S) traveled by the ball? What is its final velocity(v)?

Task: Write a JAVA program that calculates the final velocity(v) and the distance traveled(S) by the ball using the formulas below:

- $v = u + at$
- $S = ut + \frac{1}{2} at^2$

The value of acceleration due to gravity, $a = 9.8 \text{ m/s}^2$

Constraint: The user only knows 2 values:

- $u \rightarrow$ initial velocity of the ball (in meters per second)
- $t \rightarrow$ time taken (in seconds)

Sample Output:

Enter the initial velocity of the ball (in meters per second) at point A:

5.3

How much time (in seconds) does the ball take to reach point B?

10

Final Velocity of the ball = 103.3 m/s

Distance traveled by the ball (S) = 543.0 meters

Lab Submission:

- Write your name as a comment at the beginning of your code.
- Include comments in your program wherever necessary.
- Upload the .java file on Dropbox.

Lab Report Submission:

- First, download the Lab Report Template document on Dropbox.
- Use this template to complete your lab report.
- Additional Questions:
 1. (2pts) How should a programmer decide if a value must be stored as a constant or a variable?
 2. (2pts) What are some of the problems that might arise if integers were used to solve the programming task(S) in Lab-2 ?
 3. (4pts) Write a single print statement in Java that displays the words Monday, Tuesday, Wednesday, Thursday, Friday, Saturday and Sunday each on its own line.
 4. Analyze the code below:

```
String message = "Java"+" "+"is"+"fun";  
System.out.println(message);
```

- (1pt) Does it contain any errors? If yes, fix the code, otherwise do nothing.
 - (1pt) What is the output produced by the above statements?
5. (2pts) Expand the term – RAM.
 6. (2pts) Explain the difference between the methods next() and nextLine() ?
 7. (1pt) What is the process of eliminating errors in your Java program called?