# Lab 2 - Questions

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**Question 1**. Write a program that converts time given in seconds as an integer into "hh:mm:ss" format. All these three values, h for hour, m for minute, and s for second will be given as integers.

**NOTE**: If either the hour, minute, or the second value is smaller than 10, you must print a 0 next to it (i.e. Instead of 9:3:45, the program should print out 09:03:45)

| Input | 100 | 3700 | 8000 |
|---|---|---|---|
| Output | 00:01:40 | 01:01:40 | 02:13:20 |

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**Question 2.** Write a program that computes and displays the area of a geometrical shape. First, the program will read the type of the shape which is given in as a character. Then, based on the shape, you will read one or two more values.

The type of the shapes can either be,

- s or S for square
- r or R for rectangle
- c or C for circle.

- If the shape is a square, then the program will read 1 input: the edge length (**a**)
- If the shape is a rectangle, then the program will read 2 inputs: edge length (**a**) and height (**h**)
- If the shape is a circle, then the program will read 1 input: radius (**r)**

After that, your program will compute the **AREA** of the given shape and print it out to the screen as a double value.

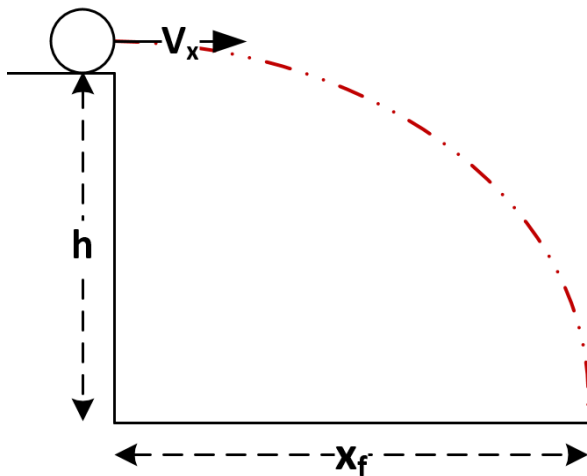**NOTE**: Area formulations of the shapes are as below:

| Square | Rectangle | Circle |
|---|---|---|
| a*a | a*h | pi*r*r |

**NOTE**: Take pi as 3.14.

| Input | s 5 | r 4 8 | C 2 |
|---|---|---|---|
| Output | 25.000000 | 32.000000 | 12.560000 |

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**Question 3.** An object is thrown near a cliff as depicted in the following figure:



Write a program which calculates after **s** seconds whether the object hits the ground or not. Your program will read three double values, x velocity (**V_x**), the height of the cliff (**h**), and seconds passed (**s**). After the object is thrown, it will start moving to the right with a **CONSTANT** speed of **V_x**. At the same time, it will start to drop down due to gravity. The vertical distance the object will cover by falling after t seconds is calculated by the formula given below.

Based on the input values, your program will check if the object hits the ground within s seconds or not. The output of the program varies as below:

- <u>If the object hits the ground within s seconds</u>:
  Output: "Object hit the ground,
            Time until crash: S_c
            Final x distance: X_f"

<u>If the object DID NOT hit the ground within s seconds</u>:

- Output: "Object did not hit the ground.
            Final x distance: X_f
            Final height: Y_f"

All the output values will be double values.      **Y = Math.sqrt(X);**

**HINT**: Formula:   $h = \dfrac{1}{2}gt^2$   h=12gt2 and take g as 9.81

**HINT**: In order to calculate the squareroot of a given number you can use the Math.sqrt method as shown below:

| Input | 12.5 33.6 1.7 | 12.45 25.76 3.5 |
|---|---|---|
|  | Object did not hit the ground | Object hit the ground |
| Output | Final x distance: 21.25000 | Time until crash: 2.291677 |
|  | Final height: 19.424548 | Final x distance: 28.531378 |