

# CS 150 Lab 9

## Loops, Loops, Loops

### Objectives

For this lab, you are to modify an existing program to solve the following problem. You will need to use loops and many of the other statements we have studied. The project is called 09Rocket and is located in the 'CS150-01 public' folder on Turing. Copy the complete project to the desktop and rename it to '06RocketXXXXXXXX', where XXXXXXXX is your PUNet ID.

### Problem statement

For this project, the program you write will display a number of rocket ships on the screen. The basic rocket ship is shown below.

```
  ^
  /*\
  /***\
 /*****\
 |  C  |
 |  S  |
 |  1  |
 |  5  |
 |  0  |
*****
*****
**  **  **  **
**  **  **  **
```

The rocket ship consists of three pieces, the nose code (the first 4 rows of text), the body (the next five rows of text), and the fins (the final 4 rows of text).

Your program should ask the user how many rocket ships to build. For each rocket ship, your program should ask how tall to make the body of the rocket ship and then display a rocket ship with a body of that height.

The rocket ship shown above has a body of height 5. A body of height 6 would have one more row of | |. A body of height 4 would have one less row.

As with most rocket ships ours has a name painted on the body. In this case the name is CS150. If the rocket ship the user wants to build is too small to contain the entire name, just paint as much of the sign as you can. If the rocket ship the user wants has a body taller than 5, leave the body below the sign blank.

Your program should be able to produce rocket ships of height 1 through 25. If the user asks for a rocket ship that is too tall or too short, display an error message and prompt the user for a different height. Continue prompting until a valid height is given.

## Sample output

```
*****  
*                Rocket Ship                *  
*****
```

How many rocket ships do you want to build? 2

Rocket Ship 1:

How tall do you want this rocket ship? (1-25): 6

```
      ^  
     /*\  
    /***\  
   /*****\  
   |  C  |  
   |  S  |  
   |  1  |  
   |  5  |  
   |  0  |  
   |____|  
*****  
*****  
** ** ** **  
** ** ** **
```

Rocket Ship 2:

How tall do you want this rocket ship? (1-25): 99

Sorry, that is an invalid height.

Rocket Ship 2:

How tall do you want this rocket ship? (1-25): 4

```
      ^  
     /*\  
    /***\  
   /*****\  
   |  C  |  
   |  S  |  
   |  1  |  
   |  5  |  
   |____|  
*****  
*****  
** ** ** **  
** ** ** **
```

## ***Testing your project***

You should test your project on the following values:

Number of rocket ships: 1  
Height of rocket ships: 0, 5

Number of rocket ships: 3  
Height of rocket ships: 6, -1, 4, 99, 20

Before submitting your final project, show that your program works by demonstrating it to the instructor or TA.

## ***Submitting your finished project***

Once you have completed your lab projects, you will need to submit it for grading. You will submit your projects to the 'CS150-01 Lab' folder on Turing. You may only submit your projects once, so make sure that they are in their final form. Also, make sure that you submit the correct project. Be sure to close Visual Studio before copying and moving your folder.

To submit the project, copy (do not move) the folder you created on the Desktop, '09RocketXXXXXXXX', to the directory Turing\Students\CS150-01 Lab.

To save a copy of your project for yourself, move the folder you created on the Desktop to Turing\Students\XXXXXXXX, where XXXXXXXX is your PUNet ID.

Be sure to close Visual Studio before attempting to copy this folder.

**If you do not have time to finish these assignments in Lab, continue working on them outside of class and submit them by 5pm on Friday, October 24, 2008.**