Computer Graphics - 300093
Tutorial 4

Tutorial Exercises:

1. Draw 4 rectangles at the same position with different colours (red, green, blue and gray), then use *translate()* to reposition the shapes to other positions.
2. Use *pushMatrix()* and *popMatrix()* to rearrange the composition from exercise 1, so that rectangle 4 will stay at the same position or its original position.
3. Use *rotate()* to change the orientation of the above shapes.
4. Use *scale()* to with a *for* loop to scale the second shape multiple times.
5. Combine *translate()* and *rotate()* to rotate the 1st shape around its own centre by 45 degree and to rotate the 2nd shape around its top-left corner by 90 degree.
6. Follow up the exercise at the lecture: You are required to write a program to get numbers from user and save them into a file with pretty format (if the number is an Integer: 10 digits in total, if the number is a Float: 6 digits at the left and 4 digits at the right of the decimal point. When the spacebar is pressed, the number is written to "words.txt" file. When the Enter key is pressed, the file is flushed, then it is closed and the program exits. Note: to check if a number is a float, you may check if the the '.' key is pressed.
7. Write a program to read a data file and to calculate the numbers of males and females in the file and the number of people born after 2003. The included data file is named: "T4q7.csv".
8. **Challenge exercise**: write a program to read a data file and visualize the subtotal values of Weekday, Saturday and Sunday for all quarters. The visualization of the values can be simply as circles whose areas are proportional to their values. The included data file is named: "T4q8.csv".