

Recitation 03

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Decision Structure

Exercise 1 - (Gaddis 3.2) - Areas of Rectangles

The area of a rectangle is the rectangle's length times its width.

Write a program that asks for the length and width of two rectangles. The program should tell the user which rectangle has the greater area, or if the areas are the same.

Exercise 2 - (Gaddis 3.3) - Age Classifier

Write a program that asks the user to enter a person's age. The program should display a message indicating whether the person is an infant, a child, a teenager, or an adult.

Following are the guidelines:

- If the person is 1 year old or less, he or she is an infant.
- If the person is older than 1 year, but younger than 13 years, he or she is a child.
- If the person is at least 13 years old, but less than 20 years old, he or she is a teenager.
- If the person is at least 20 years old, he or she is an adult.

Exercise 3 - (Gaddis 3.4) - Roman Numerals

Write a program that prompts the user to enter a number within the range of 1 through 10.

The program should display the Roman numeral version of that number. If the number is outside the range of 1 through 10, the program should display an error message.

The following table shows the Roman numerals for the numbers 1 through 10:

Number	Roman Numeral
1	I
2	II
3	III
4	IV
5	V
6	VI
7	VII
8	VIII
9	IX
10	X

Exercise 4 - (Gaddis 3.7) - Color Mixer

The colors **red**, **blue**, and **yellow** are known as the primary colors because they cannot be made by mixing other colors. When you mix two primary colors, you get a secondary color, as shown here:

- When you mix red and blue, you get purple.
- When you mix red and yellow, you get orange.
- When you mix blue and yellow, you get green.

Design a program that prompts the user to enter the names of two primary colors to mix. If the user enters anything other than **red**, **blue** or **yellow** the program should display an error message. Otherwise, the program should display the name of the secondary color that results.

Exercise 5 - (Gaddis 3.8) - Hot Dog Cookout Calculator

Assume that hot dogs come in packages of 10, and hot dog buns come in packages of 8.

Write a program that calculates the number of packages of hot dogs and the number of packages of hot dog buns needed for a cookout, with the minimum amount of leftovers.

The program should ask the user for the number of people attending the cookout and the number of hot dogs each person will be given.

The program should display the following details:

- The minimum number of packages of hot dogs required
- The minimum number of packages of hot dog buns required
- The number of hot dogs that will be left over
- The number of hot dog buns that will be left over

Exercise 6 - (Gaddis 3.9) - Roulette Wheel Colors

On a roulette wheel, the pockets are numbered from 0 to 36.

The colors of the pockets are as follows:

- Pocket 0 is green.
- For pockets 1 through 10, the odd-numbered pockets are red and the even-numbered pockets are black.
- For pockets 11 through 18, the odd-numbered pockets are black and the even-numbered pockets are red.
- For pockets 19 through 28, the odd-numbered pockets are red and the even-numbered pockets are black.
- For pockets 29 through 36, the odd-numbered pockets are black and the even-numbered pockets are red.

Write a program that asks the user to enter a pocket number and displays whether the pocket is green, red, or black. The program should display an error message if the user enters a number that is outside the range of 0 through 36.

Exercise 7 - (Gaddis 3.12) - Software Sales

A software company sells a package that retails for \$99.
Quantity discounts are given according to the following table:

Quantity	Discount
10-19	10%
20-49	20%
50-99	30%
100 or more	40%

Write a program that asks the user to enter the number of packages purchased. The program should then display the amount of the discount (if any) and the total amount of the purchase after the discount.

Exercise 8 - (Gaddis 3.15) - Time Calculator

Write a program that asks the user to enter a number of seconds and works as follows:

- There are 60 seconds in a minute.
If the number of seconds entered by the user is greater than or equal to 60, the program should display the number of minutes in that many seconds.
- There are 3,600 seconds in an hour.
If the number of seconds entered by the user is greater than or equal to 3,600, the program should display the number of hours in that many seconds.
- There are 86,400 seconds in a day.
If the number of seconds entered by the user is greater than or equal to 86,400, the program should display the number of days in that many seconds.