Recitation 03 b
-
Decision Structure

Exercise 1 - (Gaddis 8.3) - Date Printers

Write a program that reads a string from the user containing a date in the form mm/dd/yyyy. It should print the date in the format March 12, 2018.

Exercise 2 - (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.

Exercise 3 - (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 4 -   Craps

Craps is a dice game in which the players make wagers on the outcome of the roll, or a series of rolls, of a pair of dice. While shooting craps, players may use slang terminology to place bets and actions.

Names of Rolls in Craps

	1	2	3	4	5	6
1	Snake Eyes					
2	Ace Deuce	Hard Four				
3	Easy Four	Five (Fever Five)	Hard Six			
4	Five (Fever Five)	Easy Six	Natural or Seven Out	Hard Eight		
5	Easy Six	Natural or Seven Out	Easy Eight	Nine (Nina)	Hard Ten	
6	Natural or Seven Out	Easy Eight	Nine (Nina)	Easy Ten	Yo (Yo-leven)	Boxcars or Midnight

Write a program that asks the user for the value of two dice rolls. Your program should print the name of the roll using the craps slang.

Exercise 5 -   Change Calculator

You are running a store and you wan tot have a program helping to return the change to your customer with as few coins as possible for any amount less than $2. The coins you disposes are

Coins	Values
quarters	$0.25
dimes	$0.10
nickels	$0.05
pennies	$0.01

Write a program that asks the user how much change to give back to the customers.

Sample output:

```
What is the amount of change to give back? 1.43
You should give back 5 quarters 1 dime 1 nickel and 3 pennies.
```

```
What is the amount of change to give back? 0.46
You should give back 1 quarter 2 dimes 0 nickels and 1 penny.
```

Exercise 6 - (Gaddis 3.17) - Wi-Fi Diagnostic Tree

The shows a simplified flowchart for troubleshooting a bad Wi-Fi connection. Use the flowchart to create a program that leads a person through the steps of fixing a bad Wi-Fi connection. Here is an example of the program's output:

```
Reboot the computer and try to connect.
Did that fix the problem? no
Reboot the router and try to connect.
Did that fix the problem? yes
```

Notice the program ends as soon as a solution is found to the problem. Here is another example of the program's output:

```
Reboot the computer and try to connect.
Did that fix the problem? no
Reboot the router and try to connect.
Did that fix the problem? yes
Make sure the cables between the router and modem are plugged in firmly.
Did that fix the problem? no
Move the router to a new location.
Did that fix the problem? no
Get a new router.
```
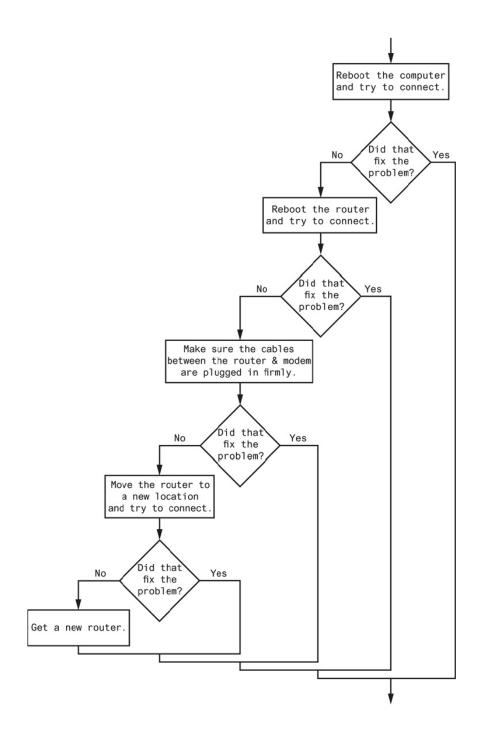
```
                                      │
                                      ▼
                            ┌─────────────────────┐
                            │ Reboot the computer │
                            │ and try to connect. │
                            └─────────────────────┘
                                      │
                                      ▼
                    No              ◇◇◇◇◇◇             Yes
              ┌───────────────────◇ Did that ◇───────────────────┐
              │                   ◇ fix the  ◇                    │
              ▼                   ◇ problem? ◇                    │
    ┌─────────────────────┐        ◇◇◇◇◇◇                        │
    │  Reboot the router  │                                       │
    │ and try to connect. │                                       │
    └─────────────────────┘                                       │
              │                                                    │
              ▼                                                    │
              No              ◇◇◇◇◇◇             Yes             │
        ┌───────────────────◇ Did that ◇───────────────────┐    │
        │                   ◇ fix the  ◇                    │    │
        ▼                   ◇ problem? ◇                    │    │
┌──────────────────────┐     ◇◇◇◇◇◇                        │    │
│ Make sure the cables │                                    │    │
│ between the router & modem│                               │    │
│ are plugged in firmly. │                                  │    │
└──────────────────────┘                                    │    │
        │                                                   │    │
        ▼                                                   │    │
        No              ◇◇◇◇◇◇             Yes            │    │
   ┌───────────────────◇ Did that ◇───────────────────┐  │    │
   │                   ◇ fix the  ◇                    │  │    │
   ▼                   ◇ problem? ◇                    │  │    │
┌──────────────────┐    ◇◇◇◇◇◇                        │  │    │
│ Move the router to│                                   │  │    │
│ a new location    │                                   │  │    │
│ and try to connect.│                                  │  │    │
└──────────────────┘                                    │  │    │
   │                                                    │  │    │
   ▼                                                    │  │    │
   No              ◇◇◇◇◇◇             Yes             │  │    │
┌──────────────────◇ Did that ◇──────────────────┐   │  │    │
│                  ◇ fix the  ◇                   │   │  │    │
▼                  ◇ problem? ◇                   │   │  │    │
┌──────────────┐    ◇◇◇◇◇◇                       │   │  │    │
│ Get a new    │                                  │   │  │    │
│ router.      │                                  │   │  │    │
└──────────────┘                                  │   │  │    │
   │                                              │   │  │    │
   └──────────────────────────────────────────────────────────┤
                                                                ▼
```

Exercise 7 - Restaurant Selector

You have a group of friends coming to visit for your high school reunion, and you want to take them out to eat at a local restaurant. You aren't sure if any of them have dietary restrictions, but your restaurant choices are as follows:

- Joe's Gourmet Burgers—Vegetarian: No, Vegan: No, Gluten-Free: No

- Main Street Pizza Company—Vegetarian: Yes, Vegan: No, Gluten-Free: Yes

- Corner Café—Vegetarian: Yes, Vegan: Yes, Gluten-Free: Yes

- Mama's Fine Italian—Vegetarian: Yes, Vegan: No, Gluten-Free: No

- The Chef's Kitchen—Vegetarian: Yes, Vegan: Yes, Gluten-Free: Yes

Write a program that asks whether any members of your party are vegetarian, vegan, or gluten-free, to which then displays only the restaurants to which you may take the group.

Here is an example of the program's output:

```
Is anyone in your party a vegetarian? yes
Is anyone in your party a vegan? no
Is anyone in your party gluten-free? yes
Here are your restaurant choices:
Main Street Pizza Company
Corner Café
The Chef's Kitchen
```

Here is another example of the program's output:

```
Is anyone in your party a vegetarian? yes
Is anyone in your party a vegan? yes
Is anyone in your party gluten-free? yes
Here are your restaurant choices:
Corner Café
The Chef's Kitchen
```