HW 8

0FENED 1090: MODELS I

Week 8 Homework

Submit Week 9 during Lab

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INSTRUCTIONS

Complete each question below by typing your answer or copying from the output in MATLAB or Excel.

This assignment is to be completed outside of class. You will submit a digital copy to your TA during the lab session next week.

!!! **To receive points for this assignment, add your name to the filename. For example, if my name is Lin Yali, I will change the filename to**

Wk08_ened1090_homework_LinYali.doc

OBJECTIVES

For this assignment, students will demonstrate

- Logical Operators
- Switch Statements
- If-Statements

Each problem can be completed without using MATLAB or Octave. Attempt each one and check the result in the programming software.

PROBLEM 1

- Identify the logical operators and describe how to use.
- Also, using **A=1, B=2, C=3, D=4** give two examples:
  - one where the result is **true**
  - one where the result is **false**

>=

Identify: Greater than or equal.
Describe: Put in the variable with greater value in the left and the variable with less value in the right or put in the variables with the same value in each side.
Ture: D >= A
False: B >= C

<=

Identify: Less than or equal.
Describe: Put in the variable with less value in the left and the variable with greater value in the right or put in the variables with the same value in each side.
Ture: A <= D
False: C <= B

==

Identify: Equal.
Describe: Put in the variables with the same value in each side.
Ture: B == (A*2)
False: B == (C*2)

~=

Identify: Not equal.
Describe: Put in the variables with different value in each side.
Ture: A ~= B
False: A ~= A

<

Identify: Less than.
Describe: Put in the variable with less value in the left and the variable with greater value in the right.
Ture: A < D
False: C < B

>

Identify: Greater than.
Describe: Put in the variable with greater value in the left and the variable with less value in the right.
Ture: D > A
False: B > C

&&, and()

Identify: And.
Describe: Both statements must be true for the compound to be true.
Ture : A == 1 && B == 2
False: A > B && C < D

||, or()

Identify: or.
Describe: Only one statements needs to be true for the compound to be true.
Ture: A == 1 || B == 1
False: A > B || C > D

PROBLEM 2

- Describe the difference between a **switch construct** and an **if statement**.
- When should each be used?

Difference: A switch construct can only give different commands according to the option that the user choose in the menu.
An if statement can give different commands according to the case that the user create.
When: If the user wants to give commands according to the option that the user choose in the menu, use a switch.
If the user wants to give commands according to the case that the user create, use an if statement.

PROBLEM 3

Consider the switch case from the lecture

```
variable = input('Color? ','s');
switch variable
    case 'red'
        %do process red;
    case 'blue'
        %do process blue;
    case 'green'
        %do process green;
    ...
end
```

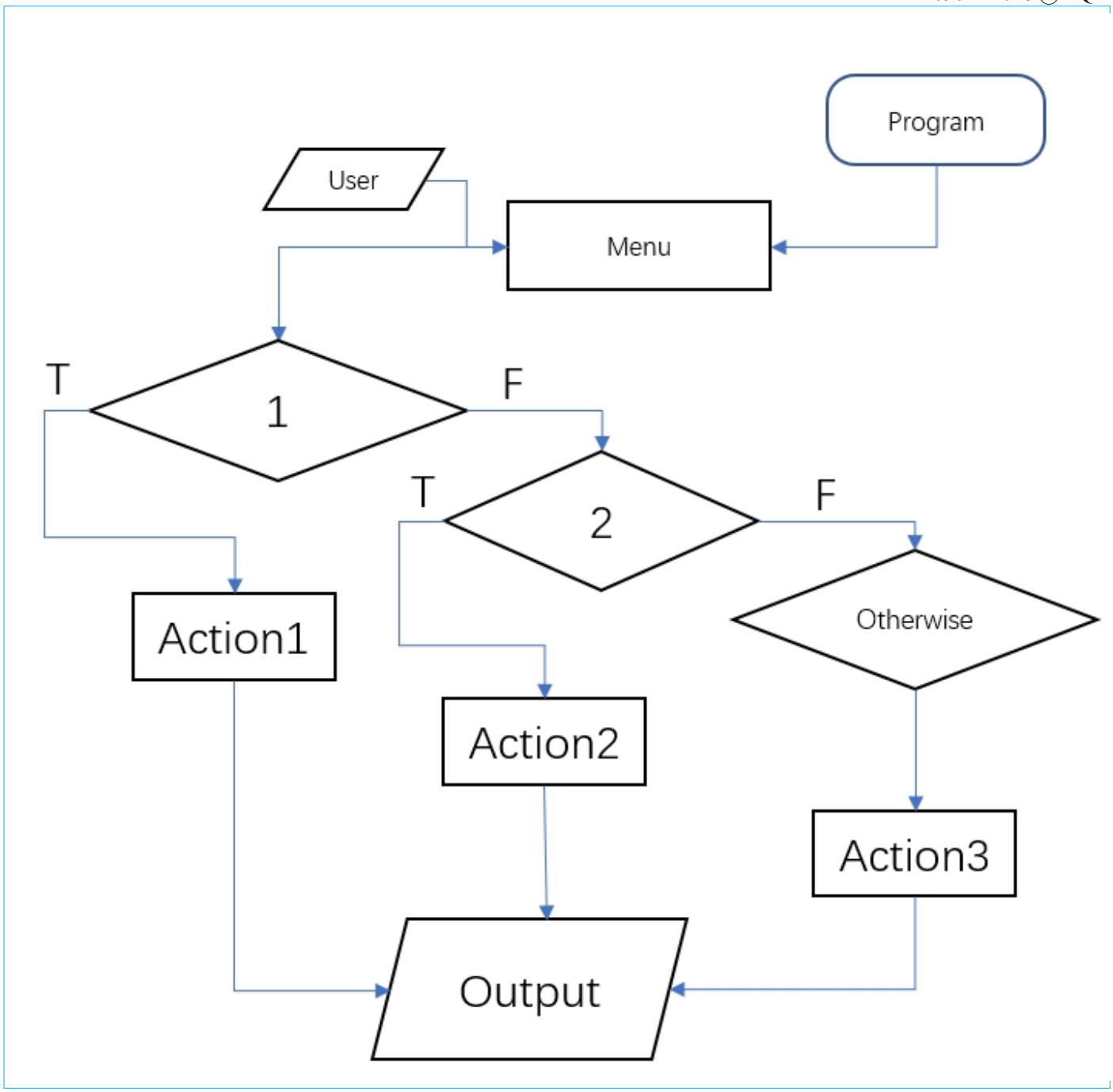
- What happens if the user types a color that is not in the **switch construct**?

The program can't continue to run.

Just like the **else** keyword of an **if construct**, MATLAB handles this event with another keyword:

otherwise

Create a flowchart of this program and insert an **image** of the completed chart below.



PROBLEM 4

Let **X=3, Y=4, Z=1**. State the result of the following logical statements

Z == X	F
Y ~= 7	T
X < Z && Y == X	F
X > Z && Z <= Y	T
X < Z || Y == (X+1)	T
X > Y || Z <= 0	F
(X ~= Z || Z > X) && Y == 4	T
(X >= Y)+2	T

PROBLEM 5

Below is how to do an **if construct** in Microsoft Excel

3	=IF(AND(A1>A2,A1<>7),5,6)
4	

- Describe what is happening in cell **B1** which contains
  =IF(AND(A1>A2,A1<>7),5,6)
- Also, what is the result?

It compares the value in cell A1 and A2, and it judge if A1 = 7. If A1 is greater than A2 and A1 is not equal to 7, then the B1's value will be 5. Else, the value of B1 will be 6.
The result is 6.