

If – else statement

The format of the if-else statement is:

```
if (logical expression)
    statement 1
else
    statement 2
```

if Statement with two alternatives

```
if (x >= 0.0)
    printf("positive\n");
else
    printf("negative\n");
```

Switch Statement

Statement provided the expressions can be written as:

(variable == value)

Syntax for the Switch Statement

```
switch (variable)
{
    case c1: any_number_of_statements1;
        break;
    case c2: any_number_of_statements2;
        break;
    ...
    default: any_number_of_statements;
}
```

Programming Questions

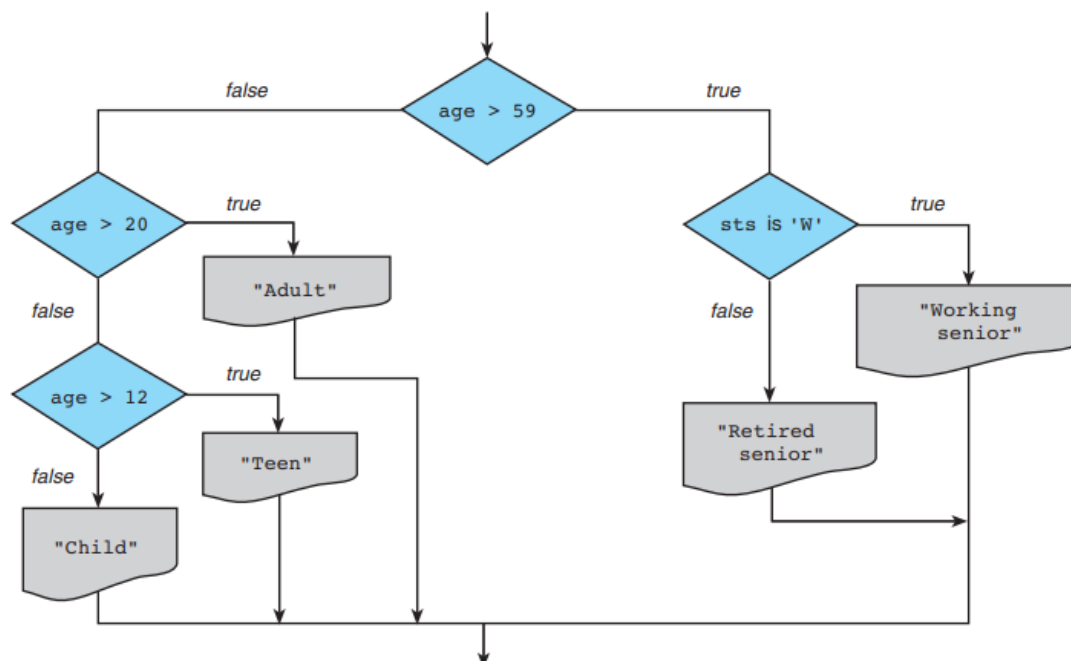
- Write a C program to Implement the following decision table using a nested if statement. Assume that the grade point average is within the range 0.0 through 4.0.

Grade Point Average	Transcript Message
0.0–0.99	Failed semester—registration suspended
1.0–1.99	On probation for next semester
2.0–2.99	(no message)
3.0–3.49	Dean's list for semester
3.5–4.00	Highest honors for semester

- Write a C program that reads a ship's serial number and displays the class of the ship. Each ship serial number begins with a letter indicating the class of the ship. The program first reads the first letter of a ship's serial number into the char variable class and then displays that character. The switch statement displays a message indicating the class of the ship.

Class ID	Ship Class
B or b	Battleship
C or c	Cruiser
D or d	Destroyer
F or f	Frigate

- Write a C program using below flow diagram



```

BEGIN
READ (AGE)
IF (AGE > 59) THEN
    IF(STS == "W") THEN
        DISPLAY ("Working Senior")
    ELSE
        DISPLAY ("Retired Senior")
    END IF
ELSE IF (AGE > 20 ) THEN
    DISPLAY ("Adult")
ELSE IF (AGE > 12 ) THEN
    DISPLAY ("Teen")
ELSE
    DISPLAY ("Child")
END IF
END

```

4. Write a program that calculates the user's body mass index (BMI) and categorizes it as underweight, normal, overweight, or obese, based on the following table from the United States Centers for Disease Control:

BMI	Weight Status
Below 18.5	Underweight
18.5–24.9	Normal
25.0–29.9	Overweight
30.0 and above	Obese

To calculate BMI based on weight in pounds (*wt_lb*) and height in inches (*ht_in*), use this formula (rounded to tenths):

$$\frac{703 \times wt_lb}{ht_in^2}$$

5. The National Earthquake Information Center has asked you to write a pro-gram implementing the following decision table to characterize an earthquake based on its Richter scale number.

Richter Scale Number (n)	Characterization
$n < 5.0$	Little or no damage
$5.0 \leq n < 5.5$	Some damage
$5.5 \leq n < 6.5$	Serious damage: walls may crack or fall
$6.5 \leq n < 7.5$	Disaster: houses and buildings may collapse
higher	Catastrophe: most buildings destroyed

Could you handle this problem with a switch statement? If so, use a switch statement; if not, explain why.

6. Chat flow Wireless offers customers 600 weekday minutes for a flat rate of 39.99. Night (8 P.M. to 7 A.M.) and weekend minutes are free, but additional weekday minutes cost 0.40 each. There are taxes of 5.25% on all charges. Write a program that prompts the user to enter the number of weekday minutes, night minutes, and weekend minutes used, and calculates the monthly bill and average cost of a minute before taxes. The program should display with labels all the input data, the pretax bill and average minute cost, the taxes, and the total bill. Store all monetary values as whole cents (rounding the taxes and average minute cost), and divide by 100 for display of results.