2 Flow Charts

1. In a game center, a child can play the games if the child's age is above 5 years and the height is above 120 cm.

   DRAW A FLOWCHART OF A PROGRAM that will ask the user to enter the child age and height, then the program should print a message saying "**Yes, You can Play**" if the child can play the game; otherwise it should print a message "**Sorry, you cannot play**".

2. Draw a *flowchart* for a program that:

   Prompts the user to enter from the keyboard three numbers a, b, and c representing the sides of a triangle. Based on the length of a, b, and c, print the type of the triangle:

   - **Equilateral:** if the three sides are equal.
   - **Not Equilateral:** if the three sides are not equal.

   Afterwards,display on screen the triangle circumference which is equal to the sum of a, b, and c.

3. Nasser currently runs a car rental dealership and wishes to recommend a car to renters based on temperature of the location they want to visit. Draw a flowchart for a program to *read* a temperature of a location and *print* the recommended type as shown in the table below:

Temperature)	Recommended Car
Below 60	Truck
From 60 to 80)	SUV
Above 80	Convertible

4. Draw a flowchart for a program to do the following:

   (a) Prompts the user to enter a decimal **value** and a character **code**.

   (b) If **code** is equal to 'R', the program calculates and prints the area of a circle and **value** is considered as the radius. The area of a circle is calculated as $PI \times radius^2$, where PI is equal to 3.14159.

   (c) If **code** is 'Q', the program calculates and prints the area of a square and **value** is considered as the side. The area of a square is calculated as $side^2$.

   (d) Any other code, display an error message and end the program.

   Example:
   If the input is 2.3 and R, then the output is 'The area of a circle is 16.619' and if the input is 2.3 and Q, then the output is 'The area of a square is 5.29'.

5. The selling price of an apartment depends on the area of the apartment and the floor number where the apartment is located.

   Draw a *flowchart* for a program that:

   (a) Prompts the user to enter from the keyboard:
   - The area by square meter of the apartment.
   - The floor number where the apartment is located.

   (b) Calculates the total price of the apartment based on the apartment area and the floor number as shown below:

Area (square meter)	Price for square meter
Upto 150	BD. 500 for each square meter
Between 151 and 200 (inclusive)	BD. 450 for each square meter
Over 200	Display apartment not available

   (c) Calculates additional **Price By Floor** using the floor number of the apartment multiplied by BD. 1000.

   (d) Display the total price if applicable.

   Apartment 1: Area 120 in Floor 0, the total price $= 120 \times 500 + 1000 \times 0 = 60,000$.
   Apartment 2: Area 160 in Floor 5, the total price $= 160 \times 450 + 1000 \times 5 = 77,000$.

6. Draw a *flowchart* for a program that:

   (a) Prompts the user to enter from the keyboard the employees **Salary** in BD.

(b) Calculates the **Tax** as shown in the table below:

Salary Range in BD	**Tax**
Between 0 and 500	0.05 × Salary
More than 500 and less than 1000	0.08 × Salary
1000 or Above	0.09 × Salary

(c) Displays the value of **Tax**.

(d) Displays the value of **Net Salary = Salary - Tax**.

Example: If Salary is 600, then Tax is $0.08 \times 600 = 48$ and Net Salary is $60048 = 552$.

7. Suppose you want to buy some pizzas from Cool Pizza restaurant.
Draw a *flowchart* for a program that:

(a) Prompts the user to enter from the keyboard the **size**, the **quantity** and **service** charge of a pizza.

(b) Displays an error message and exits the program if the size of the pizza is less than 6 inches.

(c) Calculates the **Total Price** as shown in the table below:

Size of Pizza	**Total Price BD**
6 to 10 inches	2.5 × quantity
greater than 10 inches	3.5 × quantity

(d) Displays the value of **Net Price = Total Price + Service charge**.

Example: If the size of the pizza is 7 inches, the quantity is 5 and service charge is BD. 0.850, then the Total Price is $2.5 \times 5 = 12.5$ and the Net Price is $12.5 + 0.95 = 13.35$.

8. Draw a *flowchart* for a program that:

(a) Prompts the user to enter from the keyboard **ONE** of the following characters: **T** or **C** followed by two numbers x and y.

(b) Calculates the value of f as follows:

$$f = \begin{cases} x - y, & \text{if T is entered;} \\ \dfrac{x-y}{x+y}, & \text{if C is entered;} \\ \text{Display "Error"}, & \text{If other char is entered.} \end{cases}$$

(c) Displays on the screen: The entered character, the values of x and y, and the value of f.

9. The "Burger & Fries" restaurant is running a promotion in which delivery orders receive a discount while dine-in orders receive no discount. **Draw a flowchart** that displays the discount percentage. The program should first ask the user for two values: order **type** (delivery or dine-in), and the **number** of burgers to be ordered. The program will then determine the discount as follows:

(a) **Dine-in** orders receive no discount.

(b) **Delivery** orders of up to two burgers receive 25% discount.

(c) **Delivery** orders of larger than two burgers receive 40% discount.

The program will select from above which discount percentage to display.