

PF LAB HOMETASK

Question no 1: PAC

Create a PAC (Program Analysis Chart) for a program that calculates the total cost of a meal including tax (as a percentage) and tip. Display the final cost after tax and tip.

Answer:

<p><u>Given Data</u></p> <ul style="list-style-type: none"> • Cost of ingredients (n) • Percentage Tax (T) • Percentage Tip (t) 	<p><u>Expected Output</u></p> <ul style="list-style-type: none"> • Final Cost of meal
<p><u>Process Required</u></p> <p>Final Cost = (n) + (n(%T)) + (n(%t))</p> <p>For Example:</p> $\left(\begin{array}{c} \text{Final Cost} \\ \text{of Tea} \end{array} \right) = \left(\begin{array}{c} \text{Total cost of patti} \\ + \text{milk} + \text{sugar} + \text{water} \end{array} \right) + \left(\begin{array}{c} (\text{Total Cost})0.25 \\ \%Tax \end{array} \right) + \left(\begin{array}{c} (\text{Total Cost})0.15 \\ \%tip \end{array} \right)$	<p><u>Solution Alternatives</u></p> <ul style="list-style-type: none"> • Set Tax rate as constant. • Set tip as optional.

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Question no 2: IPO

Draw an IPO (Input-Process-Output) chart for a program that calculates the area of a circle.

Formula: Area = π * radius²

Answer:

<u>Input</u>	<u>Process</u>	<u>Module Reference</u>	<u>Output</u>
<ul style="list-style-type: none"> Radius (r) 	<ul style="list-style-type: none"> Calculate square of the radius. Find Area by using formula: $A = \pi * r^2$	<ul style="list-style-type: none"> READ: radius CALCULATE: Area = PI * r * r PRINT: Area 	<ul style="list-style-type: none"> Area of circle with radius "r"

Question no 3: Algorithm

Write a step-by-step algorithm to calculate the body mass index (BMI) of a person.

Formula: BMI = weight (kg) / (height (m))².

Answer:

START

1. INPUT: Accept two values, Weight (in kilogram) and height (in meters).
2. PROCESS: Calculate BMI by dividing weight by square of the height
3. OUTPUT: Display/Print BMI on the console.

END

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Question no 4: Pseudo Code

Write pseudocode for a program that calculates the distance traveled by a car and display it.

Calculate the distance using the Formula: $\text{Distance} = \text{Speed} * \text{Time}$.

Answer:

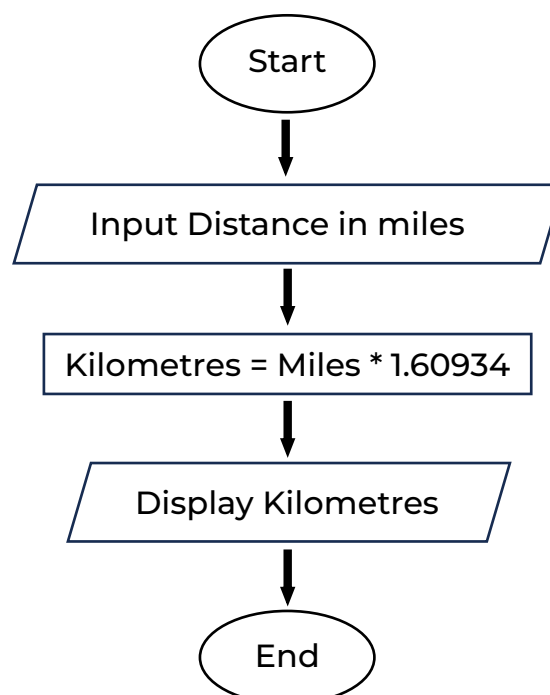
```
START
INPUT Speed.
INPUT Time.
CALCULATE/SET Distance = Speed*Time
OUTPUT "Distance:" Distance
END
```

Question no 5: Flow Chart

Draw a flowchart that represents the process of converting a distance from miles to kilometres.

The flowchart should start with receiving the distance in miles as input. It should then process the calculation $(\text{kilometres} = \text{miles} * 1.60934)$ and finish with displaying the output (the distance in kilometres). Use standard flowchart symbols.

Answer:



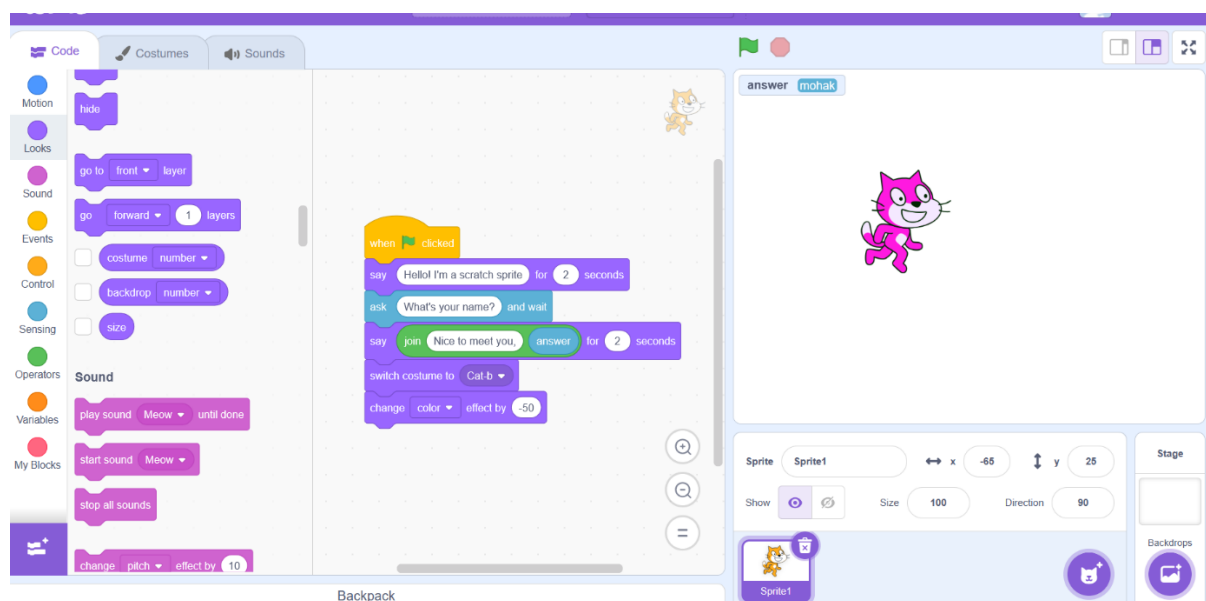
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Question no 6: Scratch Program

Create a Scratch program where a sprite introduces itself and changes its appearance.

1. When the green flag is clicked, the sprite says “Hello! I am a Scratch sprite!” for 2 seconds.
2. The sprite then asks” What is your name?” and waits for the user to type an answer.
3. After getting the answer, the sprite says “Nice to meet you, [answer]” for 2 seconds.
4. Finally, the sprite changes its costume to a different pre-existing costume and changes its colour effect.

Answer:



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Question 7: Scratch Program

Create a Scratch program where a sprite moves around the stage in a simple pattern. When the green flag is clicked, the sprite goes to the centre of the stage (x:0, y:0).

The sprite then glides to four different positions on the stage one after another:

- First, glide to the top (x:0, y:100)
- Second, glide to the right (x:100, y:0)
- Third, glide to the bottom (x:0, y:-100)
- Fourth, glide to the left (x:-100, y:0)

Each time the sprite reaches a new position, it should say “Hello!” for 1 second. After visiting all four positions, the sprite returns to the center and says “That was fun!”.

Answer:

