**Group Flowchart:**

**A diagram of a company

Description automatically generated with medium confidence**

**GROUP PSEUDOCODE:**

**Data Structure:**

base\_paint\_coverage

base\_paint\_cost

finishing\_paint\_coverage

finishing\_paint\_coverage

base\_coat\_needed

base\_paint\_cans

calculateTotalCost

base\_coat\_coats

calculateCansNeeded

base\_paint\_total\_cost

finishing\_paint\_total\_cost

subtotal

total\_cost

tax\_rate

room\_area

door\_area

window\_area

total\_area

**Step 1:** **Define function calculatePaintEstimate(total\_area):**

Step 2: Set base\_paint\_coverage to 11

Step 3: Set base\_paint\_cost to 46.25

Step 4: Set finishing\_paint\_coverage to 16

Step 5: Set finishing\_paint\_cost to 54.50

Step 6: base\_coat\_needed = promptUserForBaseCoat()

Step 7: If base\_coat\_needed:

Step 8: base\_coat\_coats = promptUserForNumberOfCoats("base")

Step 9: base\_paint\_cans = calculateCansNeeded(total\_area, base\_paint\_coverage)

Step 10: Else:

Step 11: base\_coat\_coats = 0

Step 12: base\_paint\_cans = 0

Step 13: finishing\_coats = promptUserForNumberOfCoats("finishing")

Step 14: finishing\_paint\_cans = calculateCansNeeded(total\_area, finishing\_paint\_coverage)

Step 15: Return base\_coat\_coats, base\_paint\_cans, finishing\_coats, finishing\_paint\_cans

**Step 16: Define function calculateTotalCost(base\_coat\_coats, base\_paint\_cans, finishing\_coats, finishing\_paint\_cans):**

Step 17: base\_paint\_total\_cost = base\_paint\_cans \* base\_paint\_cost

Step 18: finishing\_paint\_total\_cost = finishing\_paint\_cans \* finishing\_paint\_cost

Step 19: subtotal = base\_paint\_total\_cost + finishing\_paint\_total\_cost

Step 20: tax\_rate = 0.13

Step 21: taxes = subtotal \* tax\_rate

Step 22: total\_cost = subtotal + taxes

Step 23: displayOutput(total\_area, base\_paint\_cost, base\_paint\_cans, base\_paint\_total\_cost, finishing\_paint\_cost, finishing\_paint\_cans, finishing\_paint\_total\_cost, subtotal, taxes, total\_cost)

**Step 24: Define function calculateTotalPaintableArea(room\_area, door\_area, window\_area):**

Step 25: total\_area = room\_area - door\_area - window\_area

Step 26: Return total\_area

**Step 27: Main Function:**

Step 28: room\_area = promptUserForRoomArea()

Step 29: door\_area = promptUserForDoorArea()

Step 30: window\_area = promptUserForWindowArea()

Step 31: total\_area = calculateTotalPaintableArea(room\_area, door\_area, window\_area)

Step 32: base\_coat\_coats, base\_paint\_cans, finishing\_coats, finishing\_paint\_cans = calculatePaintEstimate(total\_area)

Step 33: calculateTotalCost(base\_coat\_coats, base\_paint\_cans, finishing\_coats, finishing\_paint\_cans)

**Testing Scenarios:**

1. Input Validation Testing:

Step 1: Enter negative values for room dimensions (e.g., -5 meters for length).

Step 2: Verify if the system prompts to enter valid numeric values.

Step 3: Repeat with non-numeric characters (e.g., "abc" for width).

Step 4: Verify if the system prompts to enter valid numeric values.

Expected Outcome: System should not proceed with calculations until valid inputs are provided.

2. Paint Estimation Accuracy Testing:

Step 1: Input dimensions for a room with known area (e.g., 5m x 4m).

Step 2: Verify if the calculated paint requirement matches expected result.

Step 3: Repeat with multiple rooms of varying sizes and shapes.

Expected Outcome: System should accurately calculate required amount of paint based on dimensions.

3. Tax Calculation and Total Cost Verification:

Step 1: Input dimensions for a room.

Step 2: Verify calculated subtotal, tax amount, and total cost.

Step 3: Repeat with multiple rooms and different paint requirements.

Expected Outcome: System should correctly calculate subtotal, apply tax rate, and provide accurate total cost.

**Computational Thinking Steps:**

We can use decomposition for this problem.

1. We must breakdown the problem into smaller problems.

2. Identify the main problem which we will make the main process

3. Break the main problem into small problems (subprocesses)

4. Solve the subproblems and combine them in order for us to make sense of the main problem

Breaking down the subprocesses:

1. Determine paint types

2. calculating the # of cans required

3. calculating the Area to be painted

4. Displaying the total cost of everything to the user

with these steps and combining them all we can make the main process work and function for users.