Module 4 - Lesson 1 activities: What are testing fundamentals?

Activity 1: Boundary Value Analysis

Task: Identify the boundary inputs to test for the two scenarios below and fill in the boundary test cases in the tables provided.

Scenario 1: For a range where the minimum value is 20 and the maximum value is 50, identify the boundary inputs to test.

Boundary	**Inputs**
Minimum 20	Just below: 19
	At: 20
	Just above: 21
Maximum 50	Just below: 49.5
	At: 50
	Just above: 50.1

Scenario 2: For a password field where the minimum number of characters is 6 and the maximum number of characters is 12

Boundary	**Inputs**
Minimum 6	Just below: hello
	At: password1234
	Just above: nothappening!
Maximum 12	Just below: maybeworks?
	At: thiswillwork
	Just above: thiswon'twork

Activity 2: Equivalence Class Partitioning (ECP)

Imagine an online streaming service with the following subscription plans:

- Children's plan: Up to 12 years old
- Teen plan: 13 to 17 years old
- Adult plan: 18 years old and over
- System limit: The system cannot accept an age over 120

Task: Using the information above, identify the equivalence classes for valid and invalid inputs.

Class	**Example inputs**
Invalid (too young)	-1
Valid (Children's plan)	8, 11
Valid (Teen plan)	14
Valid (Adult plan)	19, 101
Invalid (Too old)	121

Activity 3: Decision table

Task: Create a simple decision table for the following business rule:

- Employees will be paid 1.5 times their regular hourly rate for any hours in excess of 35 per week.

Condition or input	**Rule 1**	**Rule 2**
Hours worked ≤35	true	false
Hours worked >35	false	true
Overtime pay applied?	no	yes

Hint:

- **Rule 1:** Regular hours only (≤35).
- **Rule 2:** Includes overtime hours (>35).

Activity 4: State transition Diagram

Task: Create a state transition diagram to represent the system behaviour for the following rule:

- For an e-commerce site, items added to a basket can be removed prior to checking out.

Use any drawing tool you are comfortable with, such as Miro, Lucidchart, or Microsoft PowerPoint. If you prefer pen and paper, sketch the diagram and save it as an image for your portfolio.

Steps to Complete:

1. **Understand the states:** Identify key states such as "Basket empty," "Items in basket," and "Checkout."
2. **Define transitions:** Draw arrows between states showing how the system moves based on user actions (e.g., "Add Item," "Remove Item," "Proceed to Checkout").
3. **Save your work:**
    - For digital diagrams: Export the file as an image or PDF.
    - For physical drawings: Take a photo or scan your diagram.
4. **Add to Portfolio:** Once complete, save your diagram in your portfolio for reference and future use.

Hint: Think of the diagram as a flowchart showing how user actions affect the cart's state, including adding and removing items.