Tarea #01  
Black-box Tests

Logotipo

Descripción generada automáticamente

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**Equivalence Partitioning**

1. Function that validates credit card numbers.

- Valid card numbers: Length between 13 and 16 digits, containing only numeric digits.

* I: "1234567890123" O: (13, Valid)
* I: "1234567890123456" O: (16, Valid)
* I: "12345678" O: (8, Invalid)
* I: "12345678901234567890" O: (20, Invalid)
* I: "1234abcd56789" O: (NaN, Invalid)

2. Function that validates dates.

- Valid years: Between 1900 and 2100.

- Valid months: Between 1 and 12.

- Valid days: Between 1 and 31.

* I: "2000-05-20" O: Valid
* I: "1899-05-20" O: Invalid
* I: "2101-05-20" O: Invalid
* I: "2000-13-10" O: Invalid
* I: "2000-00-10" O: Invalid
* I: "2000-05-32" O: Invalid
* I: "2000-05-00" O: Invalid

3. Function that checks the eligibility of a passenger to book a flight.

- Eligible ages: Between 18 and 65.

- Frequent flyers: True or False.

* 18, False O: Valid
* 64, True O: Valid
* 17, True O: Invalid
* 16, False O: Invalid
* 70, True O: Invalid
* 68, False O: Invalid

4. Function that validates URLs.

- Valid URLs: Length less than or equal to 255, starting with "http://" or "https://".

* I: "http://example.com" O: Valid
* I: "https://example.com" O: Valid
* I: "ftp://example.com" O: Invalid
* I: "http://..." 256 characters O: Invalid

**Boundary Value Analysis**

1. Function that calculates the eligibility of a person for a loan based on their income and credit score.

The eligibility rules are as follows:

- If the income is less than $30,000, the person is not eligible for a loan.

- If the income is between $30,000 and $60,000 (inclusive) and the credit score is above 700, the person is eligible for a standard loan.

- If the income is between $30,000 and $60,000 (inclusive) and the credit score is below or equal to 700, the person is eligible for a secured loan.

- If the income is greater than $60,000 and the credit score is above 750, the person is eligible for a premium loan.

- If the income is greater than $60,000 and the credit score is between 700 and 750 (inclusive), the person is eligible for a standard loan.

* Income = 29,999 → Not eligible
* Income = 30,000, Score = 701 → Standard
* Income = 30,000, Score = 700 → Secured
* Income = 60,000, Score = 700 → Secured
* Income = 60,000, Score = 701 → Standard
* Income = 60,001, Score = 750 → Standard
* Income = 60,001, Score = 751 → Premium

2. Function that determines the category of a product in an e-commerce system based on its price.

The product categories and pricing rules are as follows:

- Category A: Products priced between $10 and $50 (inclusive).

- Category B: Products priced between $51 and $100 (inclusive).

- Category C: Products priced between $101 and $200 (inclusive).

- Category D: Products priced above $200.

* Price = 9 → No Category
* Price = 10 → A
* Price = 50 → A
* Price = 51 → B
* Price = 100 → B
* Price = 101 → C
* Price = 200 → C
* Price = 201 → D

3. Function that calculates the cost of shipping for packages based on their weight and dimensions.

The shipping cost rules are as follows:

- If the weight of the package is less than or equal to 1 kg and the dimensions (length, width, and height) are each less than or equal to 10 cm, the cost is $5.

- If the weight is between 1 and 5 kg (inclusive) and the dimensions are each between 11 and 30 cm (inclusive), the cost is $10.

- If the weight is greater than 5 kg or any of the dimensions is greater than 30 cm, the cost is $20.

* Weight = 1 kg, dim = 10x10x10 → $5
* Weight = 1 kg, dim = 11x11x11 → $10
* Weight = 5 kg, dim = 30x30x30 → $10
* Weight = 6 kg, dim = 20x20x20 → $20
* Weight = 2 kg, dim = 31x20x20 → $20

**Decision Table**

1. Create the decision table for a system that provides weather advisories based on temperature and humidity.

The rules are:

- Weather recommendation "High temperature and humidity. Stay hydrated." for temperature > 30 and humidity > 70.

- Weather recommendation "Low temperature. Don't forget your jacket!" for temperature < 0 and any humidity.

- No weather recommendation for any other temperature and humidity combination.

|  |  |  |
| --- | --- | --- |
| Temp | Humidity | Recommendation |
| >30 | >70 | "High temperature and humidity. Stay hydrated." |
| <0 | Any | "Low temperature. Don't forget your jacket!" |
| Others | Others | No recommendation |

2. Create the decision table for a system that authenticates users based on their username and password.

The rules are:

- Returns "Admin" for username "admin" and password "admin123".

- Returns "User" for any other username with at least 5 characters and password with at least 8 characters.

- Returns "Invalid" if the username or password lenghts are not met.

|  |  |  |
| --- | --- | --- |
| Username | Password | Returns |
| “admin” | “admin123” | Admin |
| >=5 chars | >=8 chars | User |
| <5 chars | Any | Invalid |
| >=5 chars | <8 chars | Invalid |

**State Transition**

1. Draw the state transition diagram for a simple vending machine that dispenses drinks.

- It has two states: "Ready" and "Dispensing".

- Goes from Ready to Dispensing when inserting a coin and asks you to select the drink.

- After selecting the drink, thanks you and goes from Dispensing to Ready.

* Ready → \*Inserts coin → “Select drink” → Dispensing.
* Dispensing → \*Selects drink → “Thanks” → Ready.

2. Draw the state transition diagram for an elevator system.

- The states are "Idle", "Moving Up" and "Moving Down".

- The elevator can only move up or down if the state is in "Idle" state.

- The elevator can only stop if the state is either "Moving Down" or "Moving Up"

* Idle → \*Call from up → Moving Up
* Idle → \*Call from down→ Moving Down
* Moving Up → \*Floor reached → Idle
* Moving Down → \*Floor reached → Idle