Emilio Maciel B

Equivalence Partitioning

1. Function that validates credit card numbers.
   - Valid card numbers: Length between 13 and 16 digits, containing only numeric digits.

Input	**Rule**	**Output**
1234567890123	Válida (Longitud 13 y solo números)	True
1234567890123456	Válida (Longitud 16 y solo números)	True
123456789011	Inválida (Longitud < 13)	False
12345678901234567	Inválida (Longitud > 16)	False
123456789012A	Inválida	False

2. Function that validates dates.
   - Valid years: Between 1900 and 2100.
   - Valid months: Between 1 and 12.
   - Valid days: Between 1 and 31.

Year	**Month**	**Day**	**Rule**	**Output**
2000	6	15	Todos válidos	True
1899	1	1	Año fuera de rango (bajo)	False
2101	1	1	Año fuera de rango (alto)	False
2024	0	1	Mes fuera de rango (bajo)	False
2024	13	1	Mes fuera de rango (alto)	False

2024	1	0	Día fuera de rango (bajo)	False
2024	1	32	Día fuera de rango (alto)	False

3. Function that checks the eligibility of a passenger to book a flight.
   - Eligible ages: Between 18 and 65.
   - Frequent flyers: True or False.

Edad	**Viajero Frecuente**	**Clase de Equivalencia**	**Resultado Esperado**
25	True	Edad válida, es viajero frecuente	Elegible
40	False	Edad válida, no es viajero frecuente	Elegible
17	True	Edad menor al límite	No elegible
66	False	Edad mayor al límite	No elegible

Emilio Maciel B

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

URL	**Clase de Equivalencia**	**Resultado Esperado**
https://iteso.mx	Válida (https:// y < 255)	True
http://google.com	Válida (http:// y < 255)	True
hola://hola.com	Inválida (Protocolo incorrecto)	False
(URL de > 255 chars)	Inválida (Longitud excedida)	False

Emilio Maciel B

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.

Ingreso	**Score**	**Resultado Esperado**	**Justificación**
$29,999	800	Not Eligible	Justo debajo del límite de $30k
$30,000	701	Standard	Límite inferior ingreso, score > 700
$45,000	700	Secured	Score en el límite de "Secured"
$60,000	751	Standard	Límite superior 60k, score > 750 (Regla 5)
$60,001	751	Premium	Sobre 60k, score > 750
$65,000	750	Standard	Sobre 60k, score en el límite de 750

Emilio Maciel B

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.

Precio	**Resultado**	**Justificación**
$9.99	Sin Categoría	Debajo del mínimo
$10.00	Category A	Límite inferior A
$50.00	Category A	Límite superior A
$51.00	Category B	Límite inferior B
$100.00	Category B	Límite superior B
$101.00	Category C	Límite inferior C
$200.00	Category C	Límite superior C
$200.01	Category D	Límite inferior D

Emilio Maciel B

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.

Peso (kg)	**Dim (cm)**	**Resultado**	**Justificación**
1.0	10x10x10	$5	Límites máximos para costo bajo
1.1	10x10x10	$10	Peso apenas excede categoría de $5
1.0	11x10x10	$10	Una dimensión apenas excede $5
5.0	30x30x30	$10	Límites máximos para costo medio
5.1	30x30x30	$20	Peso excede categoría de $10
3.0	31x20x20	$20	Dimensión excede categoría de $10

Emilio Maciel B

Decision Table

1. Create the decision table for a system that provides weather advisories based on temperature and humidity.
   The rules are:
   - **Regla 1**: Weather recommendation "High temperature and humidity. Stay hydrated." for temperature > 30 and humidity > 70.
   - **Regla 2**: Weather recommendation "Low temperature. Don't forget your jacket!" for temperature < 0 and any humidity.
   - **Regla 3**: No weather recommendation for any other temperature and humidity combination.

Condición	**Regla 1**	**Regla 2**	**Regla 3**
Temperatura > 30	SÍ	NO	NO
Humedad > 70	SÍ	-	NO
Temperatura < 0	NO	SÍ	NO
Acción			
"High temp/hum. Stay hydrated"	**X**		
"Low temp. Don't forget jacket!"		**X**	
No recommendation			**X**

Emilio Maciel B

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.

Condición	**R1**	**R2**	**R3**
Username es "admin"	SÍ	NO	NO
Password es "admin123"	SÍ	SÍ	NO
Username longitud >= 5	SÍ	SÍ	SÍ
Password longitud >= 8	SÍ	SÍ	SÍ
Resultado			
"Admin"	**X**		
"User"		**X**	**X**
"Invalid"			