Case study 1

Electric Usage Charges:

Create a pseudocode based on the calculation on the electric charges bills restricted to below conditions:

- The user will input the voltage, determine what the voltage level based on below Table 1

VOLTAGE LEVEL*	SUPPLY VOLTAGE
Low Voltage Single Phase Three Phase	Extra Low Voltage (V ≤ 50V) Low Voltage (50V < V ≤1kV)
Medium Voltage	Medium Voltage (1kV < V ≤ 50kV)
High Voltage	High Voltage 50kV < V ≤ 230kV Extra High Voltage 230kV < V

Table 1: Voltage Level

- Calculate the Bill Based on the Table 2 below

	TARIFF CATEGORY	UNIT	CURRENT RATE (1 JAN 2018)
	Tariff A - Domestic Tariff		
	For the first 200 kWh (1 - 200 kWh) per month	sen/kWh	21.80
	For the next 100 kWh (201 - 300 kWh) per month	sen/kWh	33.40
1.	For the next 300 kWh (301 - 600 kWh) per month	sen/kWh	51.60
	For the next 300 kWh (601 - 900 kWh) per month	sen/kWh	54.60
	For the next kWh (901 kWh onwards) per month	sen/kWh	57.10

Table 2: Electricity Tariff

- Any less than RM 3.00 is free, therefore the output of Bill is RM 0.00

Case study 2

Create a pseudocode based on the calculation on BMI restricted to below conditions:

- User in put Weight(KG) and Height(CM) that could not be negative value
- A BMI range of 25.0 to 29.9 is overweight, while the healthy range is 18.5 to 24.9. Below the range is underweight and If your BMI is above 30: Your BMI is considered obese. Output the BMI status
- Output the Weight reduction in Kilogram to make the BMI in healthy range status if the BMI is Overweight or Obese.

Case study 3

Create a pseudocode based on the calculation on Airplane Ticket price restricted to below conditions:

- The user starts with fill up the Departure Date in this format. Day : (Monday to Sunday), Year: (2020-2022), Month: (1-12), Date(1-28,30,31). Any value out or range is invalid
- The price rate is as below Calculate the price based on the destination entered:

Destinations	From (MYR)
Bandar Seri Begawan	1,499
Manila	1,899
Phnom Penh	2,099
Siem Reap	1,909
Hanoi	1,129

Table 3: Airplane Ticket price fare

- Check the date enter. If it less than one week from 5TH November 2020 then the price will be double from the price listed in Table 3.

Case study 4

Create a pseudocode based on the calculation on Employee Payroll salary restricted to below conditions:

- The user inserts the Hours/Day, Days in a month and Months must be in round and positive numbers. Meanwhile the Hours are not allowed more that 24 hours, Days more that the exceeded number of the input month (for example: Month in February could not more than 29 days) and Months not more than 12.
- Then the user must insert roles. Any roles that is not listed in Table 4 is not valid. The salary rate is based on the roles of the User input as below:

Role	Rate
Clerk	RM15/hour
Manager	RM35/hour
Assistant Manager	RM30/hour
Officer	RM20/hour
Intern	RM500 if not less than 160 hours. If less then, RM0.00

Table 4: Salary Rate based on Roles

- The salary formula is Hours x Days x Rate

Case study 5

Create a pseudocode based on the calculation on Student grades restricted to below conditions

- The user must input the Marks based on each type of Assessment : Q1, Q2,Q3, Project 1, Project 2, Assignment 1, Assignment 2, Midterm, Final. The Marks must be positive and not more than 100.
- The Distribution Percentage of each Type of Assessment are listed below. Calculate the total Marks based on the input marks for each assessment.

Assessment	Percentage (%)
Quiz (Q1 to Q3)	9
Project (Project 1 and Project 2)	30
Assignment (Assignment 1 and Assignment 2)	16
Midterm	15
Final	30

Table 5: Percentage Distribution for each Type of Assessment

- Below is the Grade based on Marks. Output the Grade based on the calculated marks

Marks	Grade	Point
90 - 100	A+	4.00
80 - 89	A	4.00
75 - 79	A-	3.67
70 - 74	B+	3.33
65 - 69	B	3.00
60 - 64	B-	2.67
55 - 59	C+	2.33
50 - 54	C	2.00
45 - 49	C-	1.67
40 - 44	D+	1.33
35 - 39	D	1.00
30 - 34	D-	0.67
00 - 29	E	0

Table 6: Grading Table

Case study 6

Create a flowchart based on the analysis on the Weather report restricted to below conditions

- The user will input the Amount of rain daily for a week and the system will calculate the average rain amount of the week and which day is has the highest amount of rain.
- If the amount is more than 230 Litre, its means that it floods and the difference will add up to the next day. Then, the system will also output how many days flood happen in the week
- If there is no rain for three days in a row, the system will notify that there is drought in which days in the week.

Case study 7

Create a flowchart based on the calculation on the Charity Eligibility restricted to below conditions:

- The user will input how many persons in a family. The number must be in round numbers and not negative. If more than 10, the system will reconfirm with the user.
- The user will start inserting the salary of the head of family and other family members salaries. Then, the users will insert household expenses and expense for each member. The salaries and expenses must be in money format and not negative.
- If the total salaries are more than total expenses, then they are not eligible to accept charity. If the total salaries are less than total expenses but the total expenses divided by number of members more than RM1500.00, also not eligible for charity.
- If total expenses less that total salaries and the total expenses divided by number of members less than RM1500.00, but the household expenses is more than 50% of the total expenses also not eligible for charity.

- If one of the member expenses more than RM 2000, also not eligible for charity.
- If none of the condition met, the system will calculate the charity amount based on the amount needed to cover the expenses compare to the earned salaries and limit to RM2000 only.

Case study 8

Create a flowchart based on the calculation of Summon fees restricted to below conditions

- The user will input the type of Summons based on table below. Any other type is not acceptable

Summons Type	Summons Fees (RM)
Parking	40
No Entrance Pass	50
Do not wear Matric Card	65
Wearing Shorts	65
Cheating during Exam	100

Table 7: Summons Fees

- The user will also input time of Summons (24HRS system. Example: 10 pm is 2200). If the time is after or before office hour (8 am-5pm). The fees will be doubled from Table 7.
- Then the input the date of summons and the date of payment in this format. Day : (Monday to Sunday), Year: (2020-2022), Month: (1-12), Date(1-28,30,31). Any value out or range is invalid
- If the difference is not more than or 2 days, the fees will be discounted for 30% off.

Case study 9

Create a flowchart based on the calculation of Point of Sales system restricted to below conditions

- The user will input the Item Id and the amount per item based on the price on Table 8 below the Item ID must between 1-5 and amount must be round numbers, positive and not more than 20:

Item ID	Summons Fees (RM)	Price (RM)/unit
1	Apple	3.40
2	Honey Dew	5.20
3	Pencil Box	2.20
4	Tissue Box	6.00
5	Pen	3.90

Table 8: Price List

- If the amount of price of each item is RM20.00, then 10% off that item price.
- If the total amount is more than RM100, then 15% off from the full amount.
- If the user buy at least 5 item of each of all items, then the user will get 15% discount.
- If the purchase fulfills at least two conditions above, the final amount will be the highest total amount following one of the conditions.

Case study 10

Create a flowchart based on the Bank Transaction system restricted to below conditions

- The user will input the amount of account balance in money format. Negative is allowed.
- The user will input one of the menu selections as stated below. Any other input, system will prompt the menu again. However, If the balance is less than or – RM150, then the menu no 2 and 4 will not be prompted.
    - 1-Check balance
    - 2-Withdrawal
    - 3-Insert money
    - 4-Loans
    - 5-Terminate
- If the user input is 1, the system will display account balance in money format. Then, the menu is prompted again based on the previous condition
- If the user input is 2, The user will input the withdrawal amount. However, if the balance is less than or -RM150, the system will not allow for the withdrawal and state the maximum withdrawal is the amount of account balance. Then, the menu is prompted again
- If the user input is 3, the user will input the currency and the amount that the user wants to add. Then the system converts based on the currency exchange below and add up to account in RM. Any other currency is invalid. Then, the menu is prompted again
    - RM1= USD 0.24
    - RM1= 272.77 Won
    - RM1= 25.08 Yen
    - RM1= SGD 0.33
    - RM1= £ 0.19 (Pound Sterling)
- If the user input is 4, the users will input the amount that amount of loan (number must be round, not negative and not less than RM10,000) and years (number must be round, not negative and not more than 10 years for RM10,000 to RM30,000 and 30 years for RM30,001 and above) of loan. If the total amount of the current account balance multiply with the number of months of loan years is more than the amount of loan, then the loan is approved. If not, the loan is not approved. Then, the menu is prompted again
- If the user input is 5, the system will end.

Case study 11

Create a pseudocode based on the Hotel Room payment system restricted to below conditions

- The user will insert the number of guest hotel. Then the age of each guest. The input must be round numbers, not negatives. If the age is more than 15 years old then its consider adult guests
- Then the user must choose which room that he/she prefers based on Room ID on table below. Any other input will not be accepted

Room ID	Room Name	Price (RM)/night	Room Load
1	Apple	300.00	Max adult:1 Max Children:1
2	Honey Dew	510.00	Max adult:3 Max Children:3
3	Mango	450.00	Max adult:2 Max Children:3
4	Rose	330.00	Max adult:1 Max Children:2
5	Hibiscus	750.00	Max adult:4 Max Children:5

Table 9: Hotel Price List

- If the Room Id load is less than the number of adult and children load, then the system will no allow for room reservation.
- Then the user will have to input the number of nights. The input must be round numbers, not negatives
- Lastly the system will display the total amount of room payment which include the total payment plus tax (6% of total payment) plus RM100/guest in one night as deposits (For example the user input 3 adult guest, 2 children guest and pick Honey Dew for 3 night, therefore the deposits is 5xRM100x3nights=RM1500)

Case study 12

Create a pseudocode based on the Hotel Room payment system restricted to below conditions

Type	Diagnostic Test	Value for Normal	Value for Prediabetes	Value for Diabetes
1	Hemoglobin A1C (HbA1C)	V < 5.7	5.7 <= V < 6.5	V ≥ 6.5
2	Fasting plasma glucose (FPG)	V < 100	100 <= V < 125	V ≥ 125
3	Oral glucose tolerance test (OGTT)	V < 140	140 <= V < 200	V ≥ 200

Table 10: Hotel Price List

- The user will enter the Value (V). Then the system will determine which type, The Diagnostic Test and the state of the patient either Normal, Prediabetes and Diabetes. If the value is for type 1, it can be in float type but for value that round numbers must be for type 2 and 3.
- If the patient state is Prediabetes, state the amount of value to reduce to Normal state based on the type
- If the patient state is Diabetes, state the amount of values to reduce to Prediabetes and Normal state based on the type

Case study 13

Create a flowchart based on the Tax rebate calculation restricted to below conditions

- The user need to insert the amount of salary each month for a year
- The total tax is 8% for each amount of monthly salaries for a year.
- Then the system will rebate of amount of tax based on Tax rebate item in Table11 below. Any other input will not be accepted

Tax Rebate ID	Tax Rebate Item	Amount of rebate(RM)
1	Zakat	Full amount
2	Life choice	25% than the amount price
3	Books/Magazine/Newspaper	5% of each price per unit
4	Hospitality	45% of the total amount
5	School Fees	20% of total amount

Table 11: Hotel Price List

- Calculate the rebate amount but the amount could not exceed 85% of the total tax. If that happens, the rebate amount is 85% of total tax.