MACHINE PROBLEMS:

1. Any customer whose total purchase is at least 2000 will be given a 5% percent discount. Write a program that reads in the customer purchase and outputs the amount to be paid.
2. A college student who is registered for 21 units or more is considered as full time student. The tuition fee for full time is 7000. A part time student is charged 300 per unit for tuition. Given the number of units a student is registering, calculate and print his tuition fee on the basis of the given criteria.
3. Accept two integers and determine of the values are equal, if the values are equal do not print anything, otherwise print the higher number.
4. Input three integers and identify if there are equal numbers. If there are equal numbers print the equal numbers, otherwise print the average of the numbers.
5. An employee's weekly working hours is 40. If an employee exceeds 40 hours, it is considered overtime. Create a program that will accept the number of hours worked by employee and his / her hourly rate and print the gross pay and overtime pay rendered, if there's no OT pay to print, print only the gross pay. To compute for the gross pay of an employee, multiply the number of hours worked by his/her hourly rate plus his/her OT pay. OT hours are time rendered by employee over 40 hours. The overtime hours rendered should be computed by using 1.50% of his hourly rate.
6. Design and develop a simple program for the Air Force to label an aircraft as military of civilian. The program is to be given the plane's observed speed in km/h (kilometer per hour). The speed will serve as its input. For planes traveling in excess of 1100 km/h, you should display them as " It's a civilian aircraft", between 500 km/h to 1100 km/h,

display them as " It's a military aircraft!" and for planes traveling at more slower speed – less than 500 km/h, you should display them as an " It's a BIRD!".

7. Write a program that reads in the sales expenses of the Short Distance Telephone Company for the past year and then calculate the profit and the next tax based on the ff. table

8.

PROFIT	TAX RATE
0 – 10000	0
10001 – 30000	100 + 3% OF THE PROFIT
30001 – 50000	200 + 5% OF THE PROFIT
OVER 50000	300 + 7% OF THE PROFIT

9. Create a program that will compute the real estate tax, given the following formulas :
   a) If value of real estate is less than 250,001.00 tax is 5% of the real estate value
   b) If value of real estate is b/w 250,001.00 to 500,000.00, tax is 10% of the real estate value
   c) If more than 500,000 tax is 15% of the real estate value
10. In 2001, Bureau of Internal Revenue proposed an overhaul of the Income Tax Law. They proposed the ff. schedule:

INCOME	TAX RATE
0 to 5000	0
5001 to 10000	100 + 3% of income over 5000
10001 to 25000	200 + 6% of income over 10000
25001 to 50000	300 + 9% of income over 25000

Over 50000 500 + 15% of income over 50000

11. Employees of ABC Electric Corporation are given raises as follows: Sales person (15%), Linemen (10%), Engineer (8%),. Write a program that will input the employees position, then input the salary and calculate/display the new salary based on the their job category.
12. Design and develop a simple application program that adds, subtract, multiply and divide two input number: SAMPLE OUTPUT

1. ADD TWO NUMBERS
2. SUBTRACT TWO NUMBERS
3. MULTIPPLY TWO NUMBERS
4. DIVIDE TWO NUMBER
5. EXIT

ENTER YOUR CHOICE : 1

Enter the first number : 10

Enter the second number : 10

The Sum is 20

13. Input three unique numbers and print the lowest number
14. Input three unique numbers and arrange the numbers in lowest to highest order.
15. Input three unique numbers and print the difference of the highest and lowest numbers.
16. Write a program that examines the value of a variable called TEMP. Then display the following messages, depending on the value assigned to TEMP.

TEMPERATURE	MESSAGE
Less than 0	ICE
Between 0 and 100	WATER
Exceeds 100	STEAM

17. The national Earthquake Information Center has the ff. criteria to determine the earthquake's damage. Here are the given Richter scale criteria and their corresponding characterization. The Richter scale serves as the input data and the characterization as output information.

RITCHER NUMBER	CHARACTERIZATION
Less than 5	LITTLE OR NO DAMAGE
5.0 to 5.5	SOME DAMAGE
5.5 to 6.5	SERIOUS DAMAGE
6.5 to 7.5	DISASTER
HIGHER	CATASTROPHE

18. Write a program that determines the class of the Ship depending on its class ID (identifier). Here are the criteria. The class ID serves as the input and the Ship class as the output information.

CLASS ID	SHIP CLASS
B or b	Battleship
C or c	Cruiser
D or d	Destroyer
F or f	Frigate

19. Write a program that computes and assess the TF of the students in one semester, based on the given mode of payment below:

PLAN KEY	Discount or Interest
1. CASH	10% discount
2. Two Installment	5% Interest
3. Three Installment	10% interest

The target user must use the key in selecting or choosing the mode of payment. The first input data is the TF, and the second input data is the mode of payment

SAMPLE INPUT / OUTPUT DIALOGUE:

Enter Tuition Fee : 20000

(Press 1 for Cash, 2 for Two installment , 3 for Three Installment)

Enter mode of payment : 2

Your Total Tuition Fee is : 21000

20. Write a program that accepts an input grade in percentile form and output its grade equivalent based on the given range of percentile and grade equivalent table below:

RANGE	GRADE
98-100	1.00
95-97	1.25
92-94	1.50
89-91	1.75
85-88	2.00
82-84	2.25

80-81	2.50
77-79	2.75
75-76	3.00
Below 75	OUT OF RANGE

21. Write a program to accept a grade and then display the equivalent grade on a class card based on the given range of grades.

GRADE	CLASS CARD GRADE
98-100	1.00
95-97	1.25
92-94	1.50
89-91	1.75
85-88	2.00
82-84	2.25
80-81	2.50
77-79	2.75
75-76	3.00
70-74	4.00
Below 70	5.00

This program is also designed to compute for the total grades based on the prelim grades, midterm grades and final grades. Total grade is equal to 30% of prelims, 30% of midterm and 40% of finals.

22. Create a program that will compute for the student and print its equivalent point. The formula for computing the grade is :

GRADE = Assign (10%) + Seatwork (20%) + Quiz (30%) + Exam (40%)

General Average	Equivalent Grade	Remarks
100-97	1.00	Excellent
96-94	1.25	Excellent
93-91	1.50	Very Good
90-88	1.75	Very Good
87-85	2.00	Good
84-82	2.25	Good
81-79	2.50	Satisfactory
76-78	2.75	Fair
75	3.00	Passed
Below 75	5.00	Failed

23. Implement the ff. decision table using a nested if statement. Assume that the grade point average is within the range 0.0 through 4.0

GRADE POINT AVERAGE	TRANSCRIPT MESSAGE
0.0 – 0.99	Failed semester – registration suspended
1.0 – 1.99	On probation for next semester
2.0 – 2.99	(no message)
3.0 – 3.49	Dean's list for semester
3.5 – 4.00	Highest honors for semester

24. Implement the ff. decision table using a multiple – alternative if statement. Assume that the wind speed is given as in integer.

Wind Speed	Category
Below 25	not a strong wind
25 – 38	strong wind
39-54	gale
55-72	whole gale
Above 72	hurricane

25. Write a switch statement that assigns to the variable lumens the expected brightness of a standard light bulb whose wattage has been stored in watts. Use this table:

WATTS	BRIGHTNESS
15	125
25	215
40	500
60	880
75	1000
100	1675

Assign -1 to lumens if the value of watts is not in the table

26. Create a program that will compute the electric bill of a person given the following ranges:

RANGE	COST
1 -99 kilowatts	10.00 / kilowatt
100-249 kilowatts	50.00 / kilowatt after the first 99 kilowatt hours
250 or more	100 / kilowatt every kilowatt hour succeeding

Sample output:

Enter number of kilowatt hours: 10
Total electric bill is P 100.00

Enter number of kilowatt hours : 100
Total electric bill is P 5000.00

Enter number of kilowatt hours : 251
Total electric bill is P 8690.00