Instructions:

You are required to do only that one question which is allotted to you as per the pdf named 'Questions_Allotted.pdf'. Document to be uploaded in moodle should have 6 sections named Question, Logic Used, Program, Inputs, Result, and output. See the sample file given as EE22D006_P12.pdf for reference. Write the program, execute the code, verify the result, take a screenshot of the output and upload in moodle as "Rollnumber_QuestionNumber.pdf" (Eg. EE22D006_P12.pdf).

(*modified part is highlighted in blue)

P1   Find the sum of N even numbers starting from 2. Store the sum in a variable named RESULT. N can be changed at will in the program, no hardcoding. Given N=11 as input, show the output. (Hint: use a loop)

P2   Write Program to find SUM and Carry of Half Adder. Store the result in variables named SUM and CARRY.

P3   Write a subroutine to circulate E and AC four times to the right. If AC contains hexadecimal 079C and E = 1, what are the contents of AC and E after the subroutine is executed?

P4   Write a program to Compare Two Words (ie, two 4 digit hexadecimal numbers) and display the result in RESULT. If the Words are equal RESULT should be set as zero, else set as one.

P5   Find the Nth term of fibonacci sequence. The Fibonacci sequence has the following starting terms: 0, 1,…. and every next term is the sum of the previous 2 terms. Given N=11 as input, show the output. (Hint: use a loop for storing last 2 terms for next term and initialize it with 0 and 1)

P6   Write a program to unpack two characters from location WRD and store them in bits 0 through 7 of locations CH 1 and CH2. Bits 9 through 15 should contain zeros.
(Hint: If WRD = 23FF, CH1 = 00FF and CH2 = 0023)

P7   Use the assembly language program (of the equivalent binary instructions) generated by a compiler from the following Fortran program. Assume integer variables.

SUM = 0
SUM = SUM + A + B
DIF   = DIF - C
SUM = SUM + DIF

P8　　Write a program that can evaluate the expression

(A x B) - (C x D)

Here each of the inputs A, B, C and D are unsigned single digit Hexadecimal numbers.
(eg. 0009, 000C etc)

P9　　Write a program for the arithmetic shift-left operation. Branch to OVF if an overflow occurs.

P10　　Write a program that calculates the sum of digits of a hexadecimal input number and stores the result in a variable named SUM. For example if 1231 is the input hex number, SUM should have the value 7.

(Hint: Use bit masking, AND and shift operations)

P11　　Write a program to unpack two characters from location WRD and store them in bits 0 through 7 of locations CH 1 and CH2. Bits 9 through 15 should contain zeros.

Give input as, WRD = 52F1, show output as CH1 = 00F1 and CH2 = 0052

P12　　Write a program to multiply two positive numbers by a repeated addition method. For example, to multiply 5 X 4, the program evaluates the product by adding 5 four times. Use this to implement following expression :

(A x B) + (C x D)

Here each of the inputs A, B, C and D are unsigned single digit Hexadecimal numbers.
(eg. 0009, 000C etc)

P13　　Ust the assembly language program (of the equivalent binary instructions)
generated by a compiler for the following IF statement:

IF (A - B) 10 , 20 , 30

The program branches to statement 10 if A - B < 0; to statement 20 if
A - B = 0; and to statement 30 if A - B > 0.

P14　　Write a program that counts the number of zeros in a given number stored in the location WRD and stores the result in a counter named CTR.

P15　　Write a program that counts the number of one's in the number stored in the location WRD and stores the result in a counter named CTR.

P16 Find the sum of all even numbers between 1 to n (excluding 1 and n). N can be changed at will in the program, no hardcoding. Given N=11 as input, show the output.
(Hint: use a loop)

P17 Write a subroutine that performs division by 4 using RIGHT SHIFT operation. Give input 1000 and show the result.

P18 Write a subroutine that performs multiplication by 8 using LEFT SHIFT operation. Give input 0020 and show the result.

P19 Write a program that performs Division operation, find Quotient and Remainder.

P20 Find the sum of all odd numbers between 1 to n(excluding 1 and n). N can be changed at will in the program, no hardcoding. Given N=11 as input, show the output. (Hint: use a loop)

P21 Write a program that can evaluate the expression
$(A + B) \times (C + D)$

Here each of the inputs A, B, C and D are expected to be unsigned single digit Hexadecimal numbers. (eg. 0009, 000C etc.)

P22 Write a program that calculates 2^N ,where N is a single digit input number greater than zero. (eg. if N = 0007, output should be 0080)

Find the value for N = 9.

P23 Write a program to find XOR between MSB and LSB of a given hexadecimal number.

If FFF0 is the input hexadecimal number, output should be F.

P24 Write Program to find XNOR between MSB and LSB of a given hexadecimal number.

If FF00 is the input hexadecimal number, output should be 0.

P25 Write a program to calculate the cube of a number. Here the input number is expected to be an unsigned single digit Hexadecimal number. (ex. If input is 0009, output has to be 02D9).