

**General instructions:**

1. Write the Assembly Language Program (ALP) for the following questions. Compile and execute those programs and display the outputs.
2. Attach the screen shots of your programs with compilation, execution and outputs details.
3. Submit all the answers as a single PDF file named with your roll number.

Q1) Given a positive number, write ALP for verifying whether it is a prime number or not, and display the result as the output.

Q2) Given a positive number, write ALP for verifying whether it is an Armstrong number or not, and display the result as the output. (An Armstrong number is an  $n$ -digit number such that sum of its digits raised to the power  $n$  is the number itself. Armstrong numbers are 1, 2, 3, 4, 5, 6, 7, 8, 9, 153, 370, 371, 407, 1634, 8202, 9474, 54748, *etc.*. For eg: 153 because  $1^3 + 5^3 + 3^3 = 153$ , 1634 because  $1^4 + 6^4 + 3^4 + 4^4 = 1634$ , and 54748 because  $5^5 + 4^5 + 7^5 + 4^5 + 8^5 = 54748$ .)

Q3) Given a positive number, write ALP for verifying whether it is a palindrome number or not, and display the result as the output. (A palindrome number is a number that remains the same when its digits are reversed. For eg: 16461)

Q4) Given a string, write ALP for counting number of words, characters (including spaces), vowels, consonants, and display the result as the output. (For eg: given 'Hello IIITDM Kancheepuram', then program should display number of words = 3, characters = 25, vowels = 10, consonants = 13)

**Note:** Students who have finished the above programs in less time can explore usage of different addressing modes in ALP.