The program implements following operations:

1) Addition of two numbers in a given base
2) Subtraction of two numbers in a given base
3) Multiplying a number with a digit number in a given base
4) Dividing a number by a digit number in a given base
5) Converting a given number in a given base to another base using 10 as an intermediary base

The numbers are represented as a class having as members a list of chars representing the digits of number, number of digits and base of the number. The digits are stored in reverse order for human reasons (addition, subtraction and multiplication when done by hand are done from right to left).

Test data for operation 1:

1) base = 10, first number = 2352, second number = 959, result = 3311
2) base = 2, first number = 101, second number = 1111, result = 10100
3) base = 16, first number = A2B6, second number = C23AA, result = CC660

Test data for operation 2:

1) base = 10, first number = 561, second number = 272, result = 289
2) base = 2, first number = 01001, second number = 0011, result = 110
3) base = 16, first number = 2C7, second number = FF, result = 1C8

Test data for operation 3:

1) base = 10, number = 561, digit number = 9, result = 5049
2) base = 4, number = 3231, digit number = 2, result = 13122
3) base = 16, number = F57B, digit number = D, result = C773F

Test data for operation 4:

1) base = 10, first number = 561, second number = 7, result = 80
2) base = 7, first number = 562365121, second number = 5, result = 111625144
3) base = 16, first number = 2C75AD, second number = B, result = 40AB2

Test data for operation 5:

1) source base = 2, number = 1100101, destination base = 7, result = 203
2) source base = 16, number = BA5D, destination base = 4, result = 23221131
3) source base = 5, number = 42341, destination base = 9, result = 3812

Note: When using base 16, please write digits from A-F with capital letters!