Exercise 2: Who Are the Winners? (50 marks)

Citizens of Zakadaha hold an annual Gagalafa festival to celebrate the harvest of their prized produce, the well-sought after cocoa beans Kokomoko. A lucky draw is held during the festival. Every participant is given a lucky draw number. Each year, the organizer decides on two non-zero digits, the *factor-digit* and the *must-have-digit*. These two digits need not be distinct.

A winning lucky draw number is a number that is a multiple of *factor-digit* as well as contains the *must-have-digit*.

In this exercise, you are to write a program **winners.c** to read in the following three inputs:

- The factor-digit, which is a non-zero digit (1 – 9).
- The must-have-digit, which is also a non-zero digit (1 – 9).
- The number of participants, *n*. Lucky draw numbers will be numbered from 1 to *n* inclusively.

You may assume that all inputs are valid.

For example, if factor-digit is 3, must-have-digit is 5, and the number of participants is 100, then the number of winners is 6 (the winning numbers are 15, 45, 51, 54, 57 and 75).

Your program is to count the number of winners whose lucky draw number is a multiple of factor-digit as well as contains the must-have-digit.

Three sample runs are shown below, with user inputs shown in **bold**.

```
Enter factor-digit: 3
Enter must-have-digit: 5
Enter number of participants: 100
Number of winners: 6
```

```
Enter factor-digit: 9
Enter must-have-digit: 1
Enter number of participants: 15
Number of winners: 0
```

```
Enter factor-digit: 7
Enter must-have-digit: 7
Enter number of participants: 200
Number of winners: 5
```

You must write additional function(s) besides the main function, or marks will be deducted on design.

Skeleton Program:

A skeleton program **winners.c** is available in your plab account and is shown below.

```
// CS1010 AY2011/2 Semester 1
// PE1 Ex2: winners.c
// Name:
// Matriculation number:
// plab account-id:
// Discussion group:
// Description:

int main(void)
{
   int factor;

   printf("Enter factor-digit: ");
   printf("Enter must-have-digit: ");
   printf("Enter number of participants: ");

   return 0;
}
```

=== END OF PAPER ===