15CSE180 Computer Programming Lab
Periodical Lab - 1
(50 Marks)
Set – 1

1. Any drug (depending upon its composition) looses `p%` of its effectiveness every month in it's storage. When its effectiveness is below 50% it is considered expired and must be discarded. Write a program that determines how many months the drug can remain in storage.

   Sample Session follows. (Note since the values are rounded figures to some significant values, your results may/may not match the values given here!!)

```
Enter the name of the drug: vilaspen
Enter percentage: 4%

month: 0        effectiveness: 100.0
month: 1        effectiveness: 96.0
month: 2        effectiveness: 92.16
month: 3        effectiveness: 88.4735
month: 4        effectiveness: 84.9346
month: 5        effectiveness: 81.5372
month: 6        effectiveness: 78.2757
month: 7        effectiveness: 75.1447
month: 8        effectiveness: 72.1389
month: 9        effectiveness: 69.2533
month: 10       effectiveness: 66.4832
month: 11       effectiveness: 63.8239
month: 12       effectiveness: 61.2709
month: 13       effectiveness: 58.8201
month: 14       effectiveness: 56.4673
month: 15       effectiveness: 54.2086
month: 16       effectiveness: 52.0402
month: 17       effectiveness: 49.9586

Vilaspen can be kept in storage for 16 months. It should be
declared expired thereafter.
```

```
Do you want to continue (y/n): n
```

2. Given an array of sorted integers, write a program to find the closest array element to a given number.

   Given `{1, 2, 4, 5, 6, 6, 8, 9}` and the number as `11` the closest array element is `9`.

   Given `{2, 5, 6, 7, 8, 8, 9}` and the number as 4 the closest array element is `5`.

   If completed, can you make your program work for unsorted array of integers?

15CSE180 Computer Programming Laboratory
Periodical Lab – 1
(50 Marks)
Set – 2

1. Collecting money becomes increasingly difficult during periods of recession, so companies may tighten their credit limits to prevent their accounts receivable (money owed to them) from becoming too large. In response to a prolonged recession, one company has cut its customers' credit limits in half. Thus, if a particular customer had a credit limit of Rs. 100000, it's now Rs. 50000. If a customer had a credit limit of Rs. 250000, it's now Rs. 125000. Write a C program using functions that analyzes the credit status of a given customer of this company. For each of given customer you should provide:

   a) The customer's account number
   b) The customer's credit limit before the recession and
   c) The customer's current balance.

   Your program should calculate and print the new credit limit for each customer and should determine (and print) customer's current balance. Let your program prompt the above information and do the required computation forever as long as the users want to quit willingly.

   A typical input and computation is shown below for your reference.

```
Before Recession
Enter the customer's account number: 123456
Enter customer's credit limit (old): 100000
Enter customer's balance           : 30000

After Recession
Customer's account number          : 123456
Customer's new credit limit        : Rs. 50000
Customer's balance                 : Rs. -20,000

Customer has spent Rs. 70,000 (1,00,000 - 30,000) So owes
Rs. 20,000 to the company.
```

2. Given an array of `n` integers (duplicates allowed), write a program to find the contiguous (continuous) set of integers are present in the array.

   For example, given the array `{5, 2, 3, 6, 4, 4, 6, 6}` the contiguous set of integers are `{2, 3, 4, 5, 6}`.

   Given `{10, 14, 10, 12, 12, 13, 15}` the output should be `None` as there are no continuous set of integers in the given array.