SHEET 7

1. Write C++ program that reads an array of n integers in **main**. Then it calculates the binary representation of those integers in another array as follows:
   a. Write function **convertToBinary** that takes the array of integers and returns another array of binary representations
   b. Write function **Display** that displays both arrays.

Hint: to convert to binary, keep dividing the number by 2 (until it equals to 1) and store the remainder of each division as in this example: $(46)_{10}$ $(101110)_2$

46	0
23	1
11	1
5	1
2	0
1	1

```
Enter the number of elements
5
Enter 5 elements
2 6 8 12 3
The binary representation of each integer:
2 --> 10
6 --> 110
8 --> 1000
12 --> 1100
3 --> 11
Press any key to continue . . .
```

2. Write C++ program that represents ***tripDuration*** as a *structure*. It consists of hours, minutes and seconds. The program should read n durations, then displays the total duration as follows:
   a. Write function **Input** to read the durations

```
Enter the number of trips:
3
Enter 3 durations (Hours Minutes Seconds):
2 45 30
1 50 24
1 33 52
The total duration for 3trips is: (HH:MM:SS)
6 : 9 : 46
Press any key to continue . . .
```

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<tr>
<td>b. Write function calcTotal to calculate the total duration in (hours :minutes :seconds)
c. Display result in main()</td>
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<td>3. Write C++ program that accepts an array of n integers. Then, the program asks the user to type an integer value x and an index value i between 0 and n. Then value x should be inserted at index i in the array
a. Write function insertValue that inserts the value x at the place i in the array, by shifting each element right and dropping off the last element.
b. Input and output operations are carried out in main()</td>
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```
Enter the number of elements
5
Enter 5 elements
10 20 30 40 50
Enter the value to insert: 7
Enter index to place the value:2
10
20
7
30
40
Press any key to continue . . .
```

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