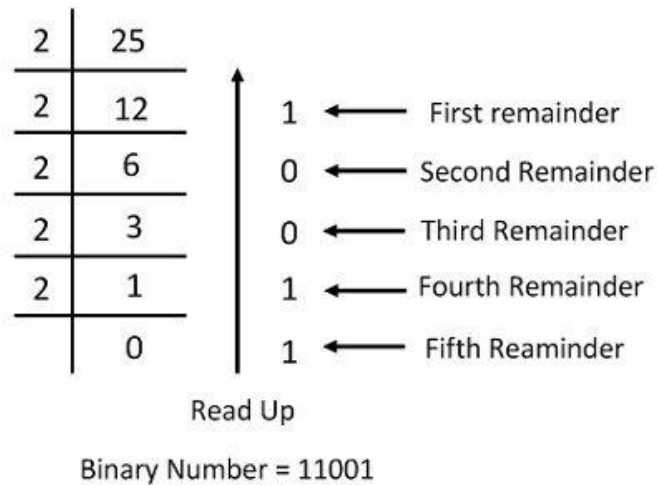


7.3 LAB TASKS

1. Do you remember the algorithm to convert an integer into a binary number? Here is the basic idea just to revise the concept behind it:



Note that this is the method to convert a *whole* number into its binary equivalent.

Write a program that reads a *whole* number and prints all of its binary digits: Print the remainder $number \% 2$, then replace the *number* with $number / 2$. Keep going until the number is 0. For example, if the user provides the input 13, the output should be

1
0
1
1

[25 marks]

2. Write a C++ program which asks the user to enter a phrase and then provides the following information to the user:

Total number of words in the phrase

Total number of vowels in the phrase

Use a for loop to iterate over all the characters of the phrase. Keep updating the variables *word_count* and *vowel_count* inside the loop and display their final values outside the loop.

[25 marks]

3. Write a program that reads a set of floating-point values. Ask the user to enter the values, then print the sum, average, minimum, maximum, and range (difference between minimum and maximum) of the values.

A sample output of the program is:

How many numbers will you enter: 5

2 4 6.5 9.5 2

The sum of these numbers is 24

The average of these numbers is 4.8

The minimum of these numbers is 2

The maximum of these numbers is 9.5

The range of these numbers is 7.5

Prompt the user to enter a positive value for "n" otherwise your program should terminate by displaying the message "you have entered an invalid input".

First write this code with a while loop and then with a for loop.

[25 marks]

4. Write a program which reads a number as an input and then prints a particular pattern on the screen. For example, if the input value is 5 the pattern should be:

```
1
12
123
1234
12345
```

If the input value is 7:

```
1
12
123
1234
12345
123456
1234567
```

[25 marks]