Lab Sheet- 2

MULTIPLICATION OF TWO UNSIGNED INTEGER BINARY NUMBERS BY PARTIAL-PRODUCT METHOD.

Objective

To simulate binary multiplication by partial product method.

The program for multiplying two numbers is based on the procedure we use to multiply number with paper and pencil. Multiplication process consists of checking the bits of the multiplier B and adding the multiplicand A, as many times as there are 1's in B, provided that the value of A is shifted left from one line to the next. As the computer can add only two numbers at a time, we reserve a memory location, P (say) to store intermediates sums. The intermediate sum is called partial products as they hold a partial product until all numbers are added. This is the reason why the method named partial product method.

Partial product is initially started with the zero. The multiplicand A is added to the content of P for each bit of the multiplier B that is 1. The Value of A is shifted left after checking each bit of the multiplier. The final value in P gives the products of the two unsigned integer binary number.

For 4-bit numbers, when multiplied, the product contains eight significant bits.

An example with four significant digits is shown below:

```
      A = 00001001                      P
      B = 00001101              ------------------------
   --------------------------          00000000
          00001001                     00001001
          00000000                     00001001
          00100100                     00101101
          01001000                     01110101
-----------------------------
          01110101
```