

Computer Architecture and Organization

Digital Assignment 1

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Binary Multiplication Code in "C":

```
/*  
* C Program to Find Multiplication of two Binary Numbers  
*/  
  
#include <stdio.h>  
  
int binaryproduct(int, int);  
  
int main()  
{
```

```

long binary1, binary2, multiply = 0;
int digit, factor = 1;

printf("Enter the first binary number: ");
scanf("%ld", &binary1);
printf("Enter the second binary number: ");
scanf("%ld", &binary2);
while (binary2 != 0)
{
    digit = binary2 % 10;
    if (digit == 1)
    {
        binary1 = binary1 * factor;
        multiply = binaryproduct(binary1, multiply);
    }
    else
        binary1 = binary1 * factor;
    binary2 = binary2 / 10;
    factor = 10;
}
printf("Product of two binary numbers: %ld", multiply);
return 0;
}

```

```

int binaryproduct(int binary1, int binary2)
{
    int i = 0, remainder = 0, sum[20];

```

```
int binaryprod = 0;

while (binary1 != 0 || binary2 != 0)
{
    sum[i++] =(binary1 % 10 + binary2 % 10 + remainder) % 2;
    remainder =(binary1 % 10 + binary2 % 10 + remainder) / 2;
    binary1 = binary1 / 10;
    binary2 = binary2 / 10;
}
if (remainder != 0)
    sum[i++] = remainder;
--i;
while (i >= 0)
    binaryprod = binaryprod * 10 + sum[i--];
return binaryprod;
}
```

```
main.c
4
5 int main()
6 {
7
8     long binary1, binary2, multiply = 0;
9     int digit, factor = 1;
10
11     printf("Enter the first binary number: ");
12     scanf("%ld", &binary1);
13     printf("Enter the second binary number: ");
14     scanf("%ld", &binary2);
15     while (binary2 != 0)
16     {
17         digit = binary2 % 10;
18         if (digit == 1)
19         {
20             binary1 = binary1 * factor;
21             multiply = binaryproduct(binary1, multiply);
22         }
23         else
24             binary1 = binary1 * factor;
25         binary2 = binary2 / 10;
26         factor = 10;
27     }
28     printf("Product of two binary numbers: %ld", multiply);
29     return 0;
30 }
31
32 int binaryproduct(int binary1, int binary2)
33 {
34     int i = 0, remainder = 0, sum[20];
35     int binaryprod = 0;
36
37     while (binary1 != 0 || binary2 != 0)
38     {
39         sum[i++] = (binary1 % 10 + binary2 % 10 + remainder) % 2;
40         remainder = (binary1 % 10 + binary2 % 10 + remainder) / 2;
41         binary1 = binary1 / 10;
42         binary2 = binary2 / 10;
43     }
44     if (remainder != 0)
45         sum[i++] = remainder;
46     --i;
47     while (i >= 0)
48         binaryprod = binaryprod * 10 + sum[i--];
```

Input:

```
Enter the first binary number: 10111
Enter the second binary number: 11010
```

Output:

```
Enter the first binary number: 10111
Enter the second binary number: 11010
Product of two binary numbers: 1001010110

...Program finished with exit code 0
Press ENTER to exit console. 
```

******END******