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;
}
```

Run Debug Stop Share Save { } Beautify

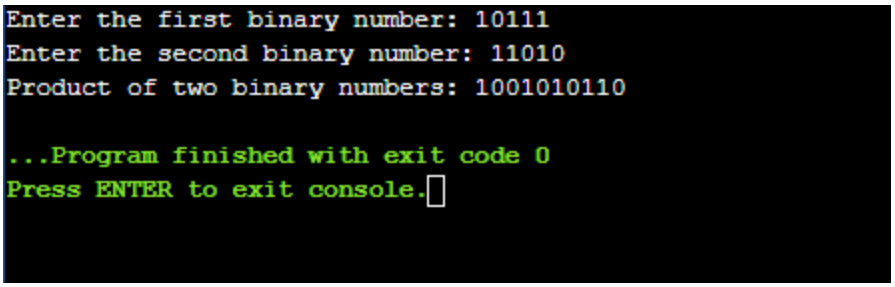
main.c

```c

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--];
```

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 **********