CSE112 Project-2

Booth's Algorithm

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10th November, 2019

Multiplication Algorithm

Algorithm Used:

The algorithm used for multiplication is Booth's Algorithm

Time Complexity:

Let n = Multiplicand

r = Multiplier

Then complexity = O(log(n) * log(r))

Test Cases:

```
Enter first number: 3
Enter second number: -4

MULTIPLICATION
RESULT = -12 ( 1110100 )
```

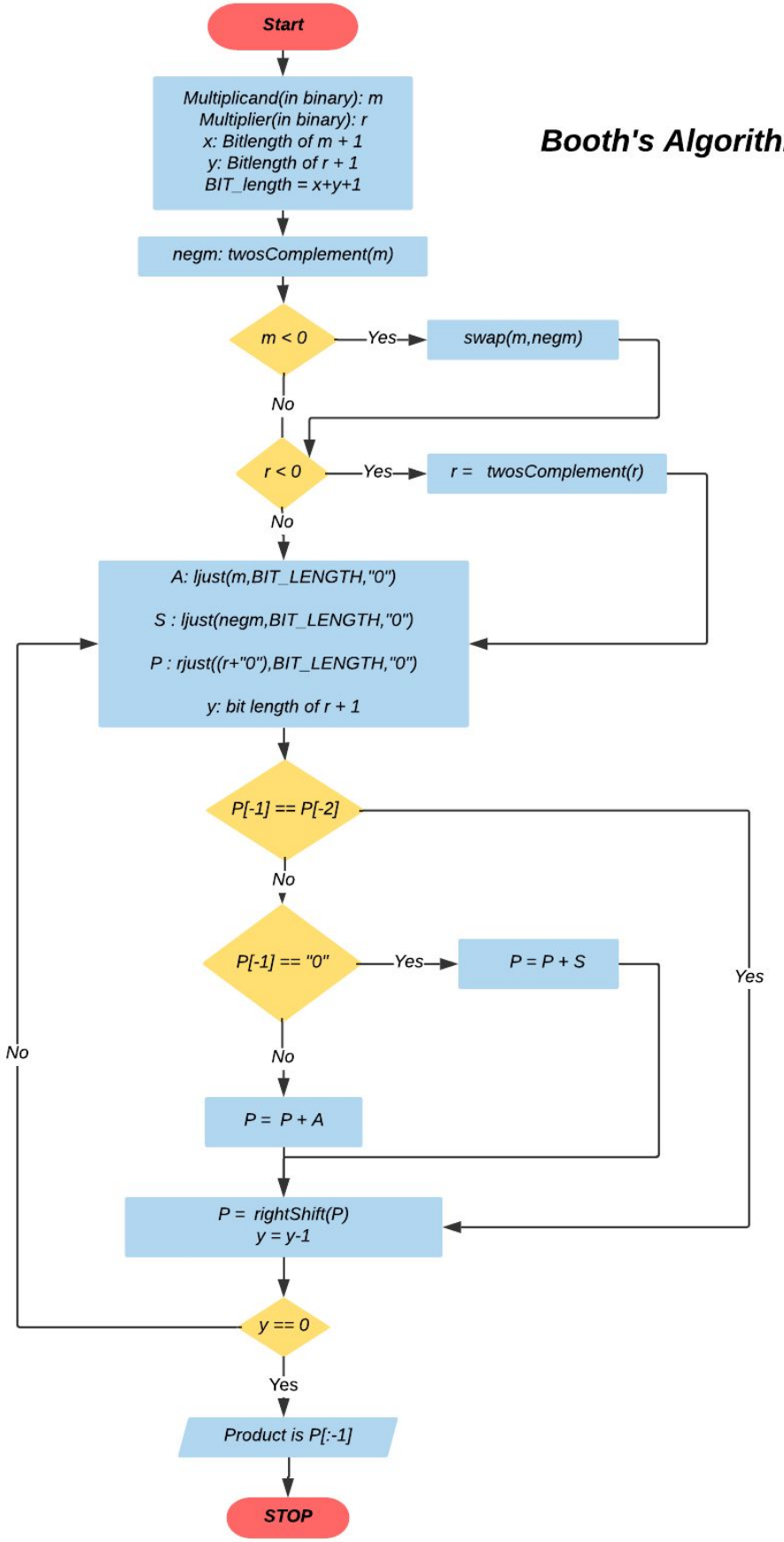
```
Enter first number: -110
Enter second number: -5

MULTIPLICATION
RESULT = 550 ( 001000100110 )
```

```
Enter first number: 7
Enter second number: 101

MULTIPLICATION
RESULT = 707 ( 001011000011 )
```

Booth's Algorithm



Division Algorithm

Algorithm Used:

The algorithm used for division is Restoring Division Algorithm.

Time Complexity:

Let m = Dividend

n = Divisor

Then complexity = O(log(n) * log(m))

Test Cases:

```
Enter first number: 7
Enter second number: 101

DIVISION ( Taking Dividend = 7 and Divisor = 101 )
Quotient = 0 ( 0 )
Remainder = 7 ( 0111 )
```

```
Enter first number: -11
Enter second number: 17

DIVISION ( Taking Dividend = -11 and Divisor = 17 )
Quotient = 0 ( 0 )
Remainder = -11 ( 10101 )
```

```
Enter first number: -110
Enter second number: -5

DIVISION ( Taking Dividend = -110 and Divisor = -5 )
Quotient = 22 ( 010110 )
Remainder = 0 ( 0 )
```

Division using Restoring Division Algorithm