Exponentiation

Introduction

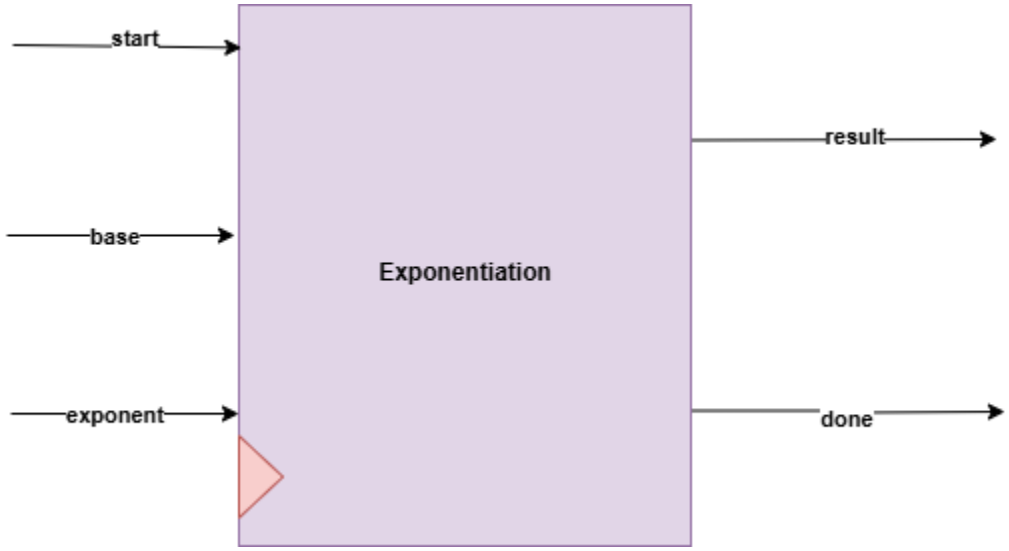
Exponentiation is a mathematical operation involving two numbers, the base (b) and the exponent (n), and is written as (b^n).

Problem Statement

Exponentiation is only supported if the base is a power of 2 or the exponent is 2.

Design and Implementation:

Block Diagram



Interfaces

Signals	Width	Description
start	INPUT	Start flag
base	INPUT	The base is the number that is being multiplied.
exponent	INPUT	The **exponent** (or power) indicates how many times the base is multiplied by itself.
result	OUTPUT	$Base^{exponent}$
done	OUTPUT	Done flag

- Note that this block is instantiated twice in top module to U0_exponentiation and U1_exponentiation
- Exponentiation_For_R block does the same operation but for (R1 ^X) and (R2^Y) instated