CA5   Sajad hasan pour
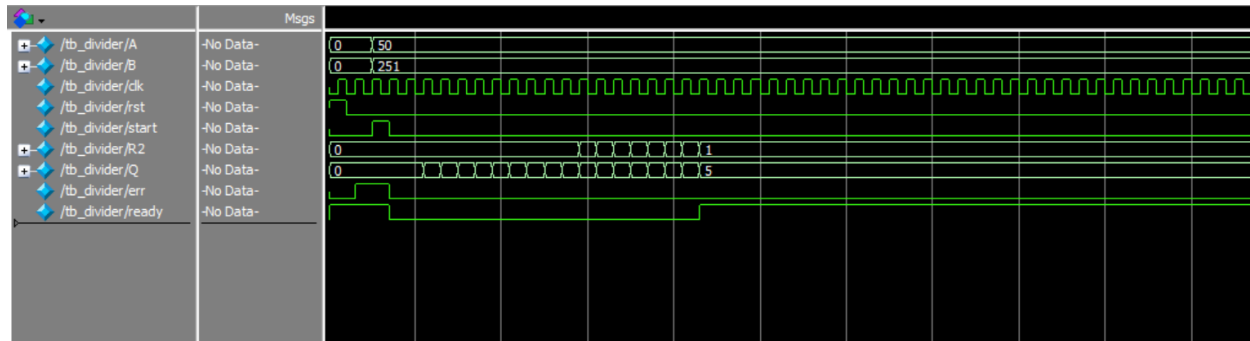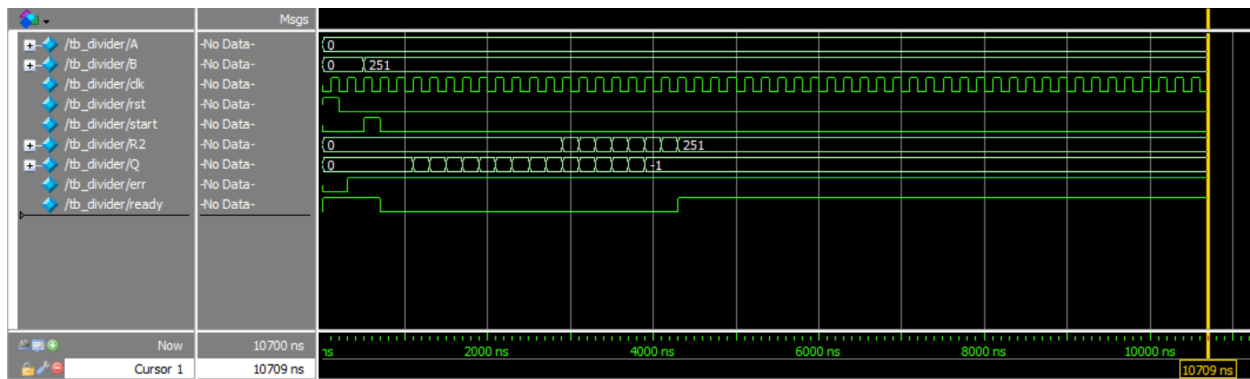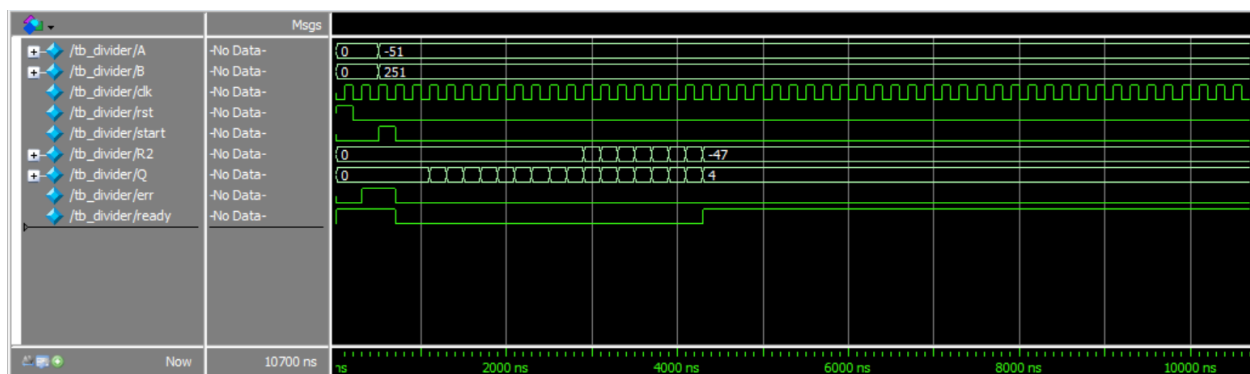   ٨١٠١٠٢٤٣٢
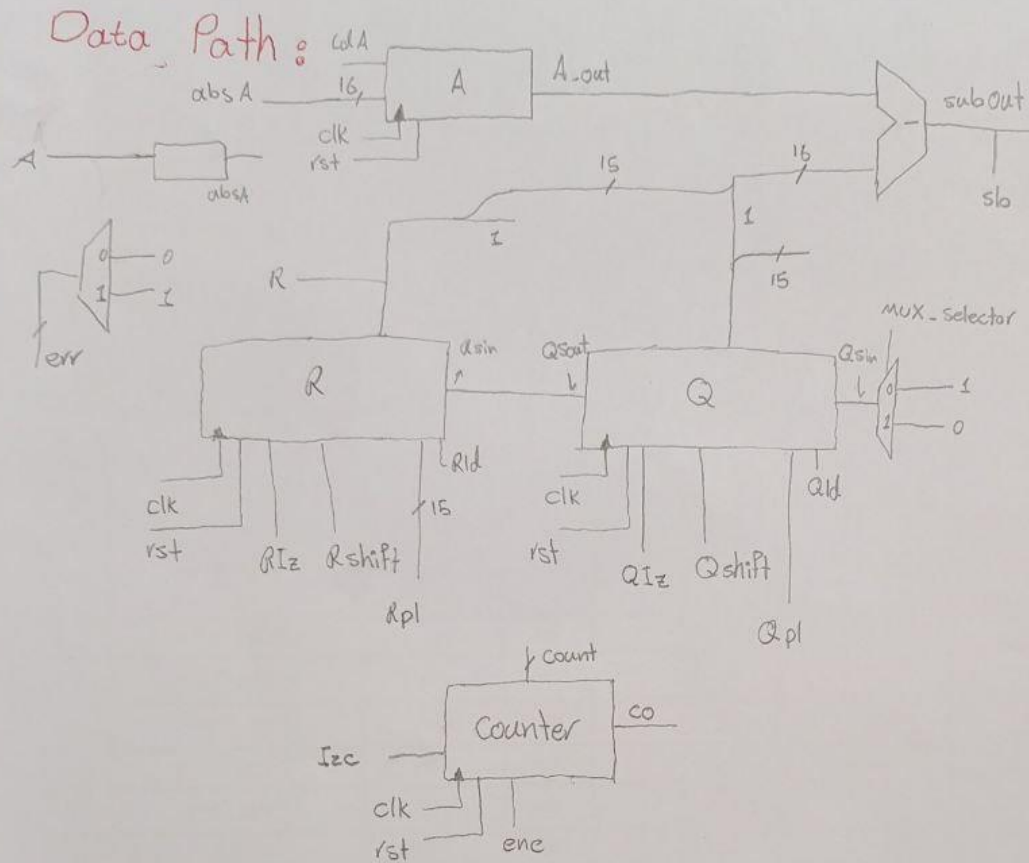
Test bench for typical number:

Test bench for 0 input:

test bench for negative input:

Sajad Hassan pour   CA5   810102432

Data Path:

LdA

absA $16_/$ A   A_out   subout

clk   rst

A   absA

15   16   slo

0 — 0   1   1   15

1 — 1   R

err

Qsin   Qsout   Qsin   MUX_selector

R   Q   0 — 1   2 — 0

Rld   Qld

clk   15   clk

rst   RIz Rshift   rst   QIz Qshift

Rpl   Qpl

count

Izc   Counter   co

clk

rst   ene

Controller:

start=0   start=1   co=0

Idle   start=1 → Get_ready   start=0 → Load → calculating

ready

           LdA   enc

           Izc   Qshift

           Qld   Qsin= MUX ? 0:1

           RIz   Rshift= sub? 1:0

                       Rload= sub? 0:1