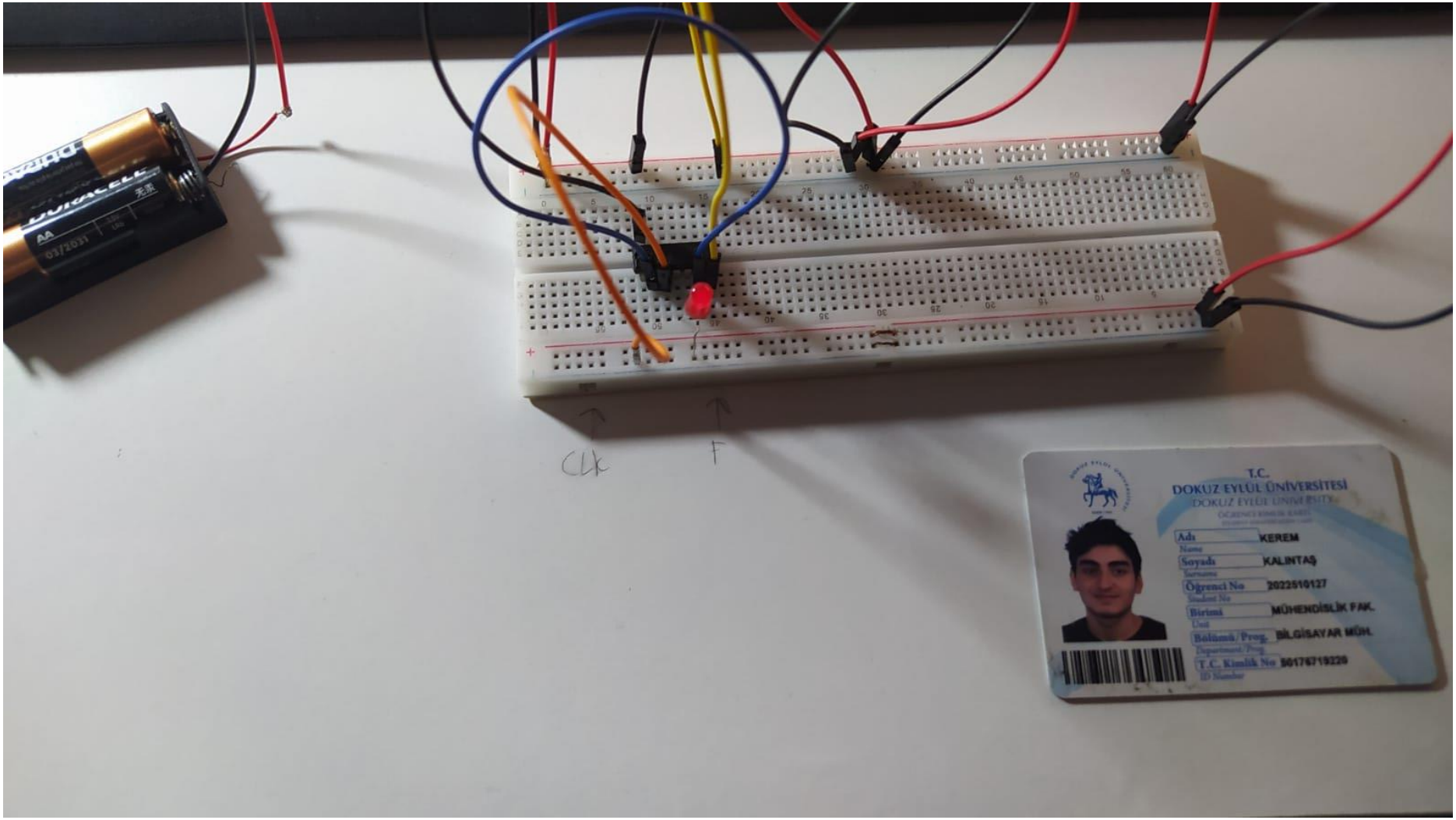
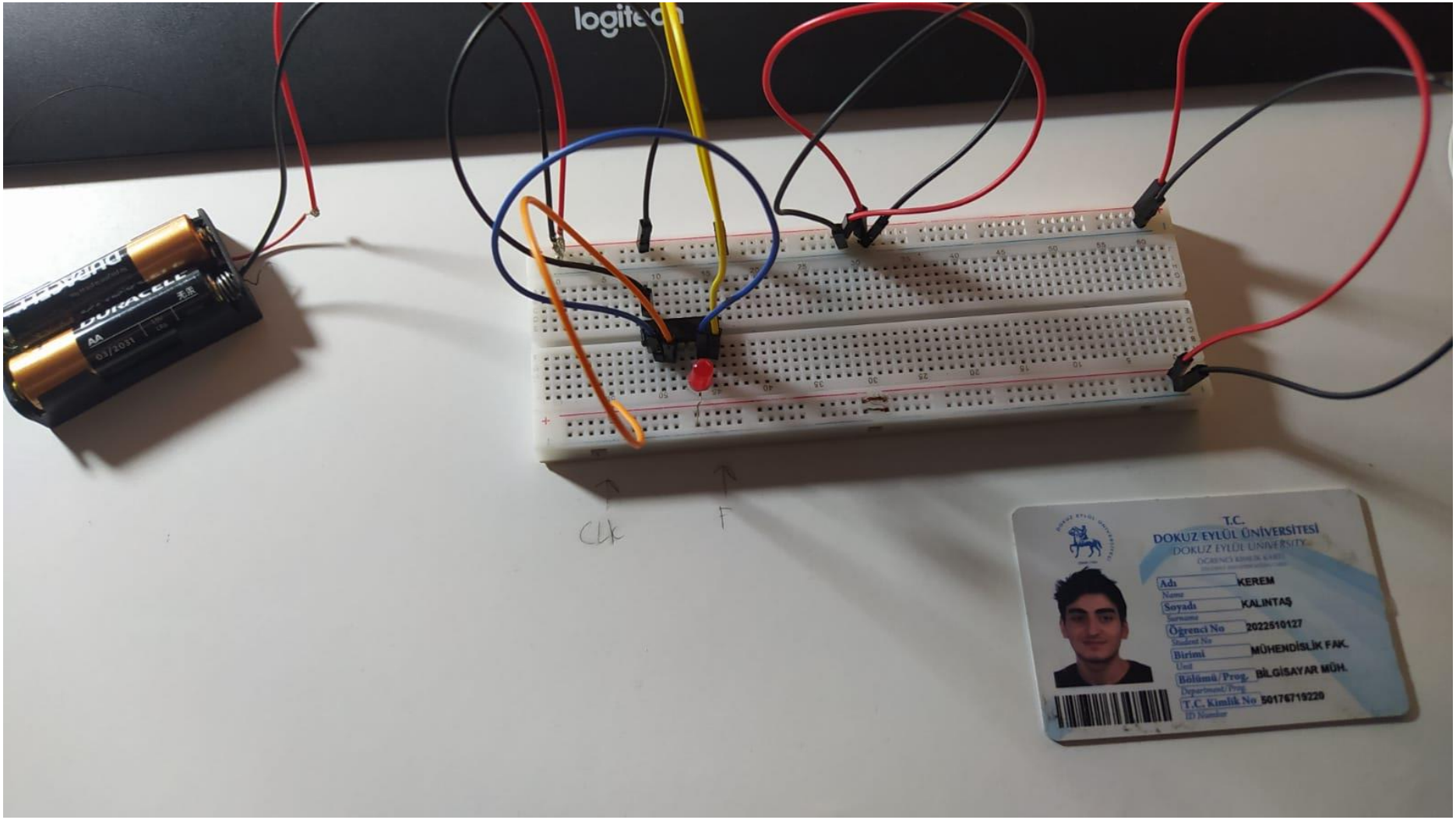
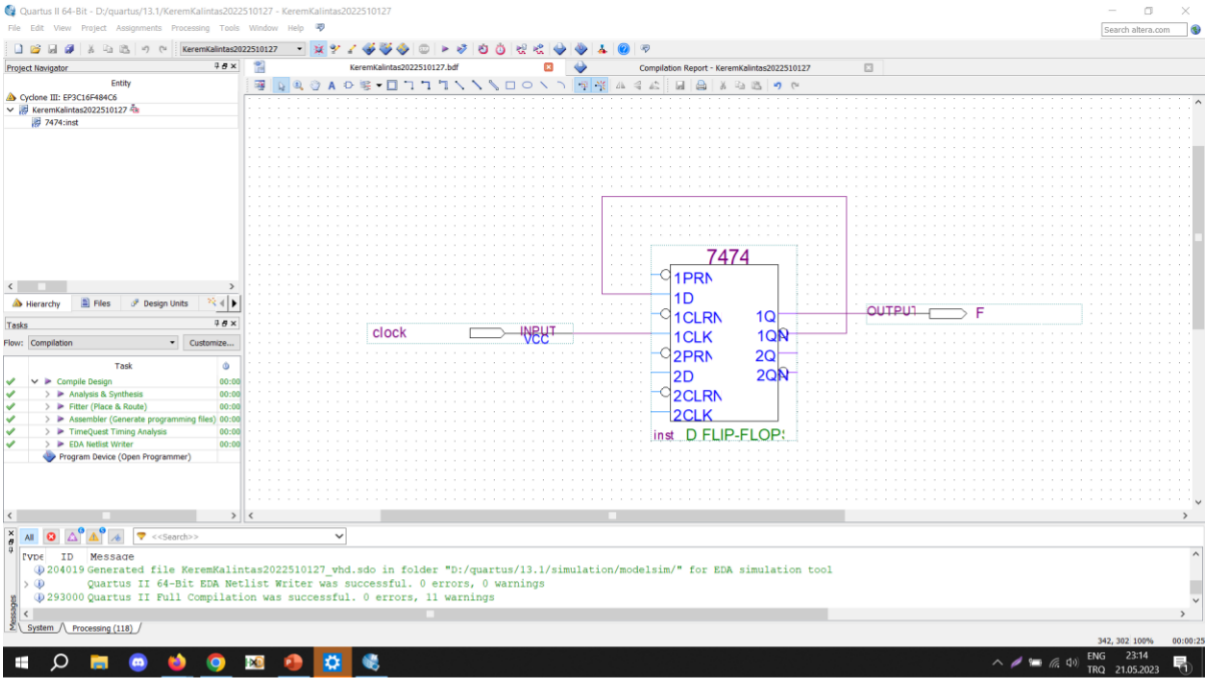
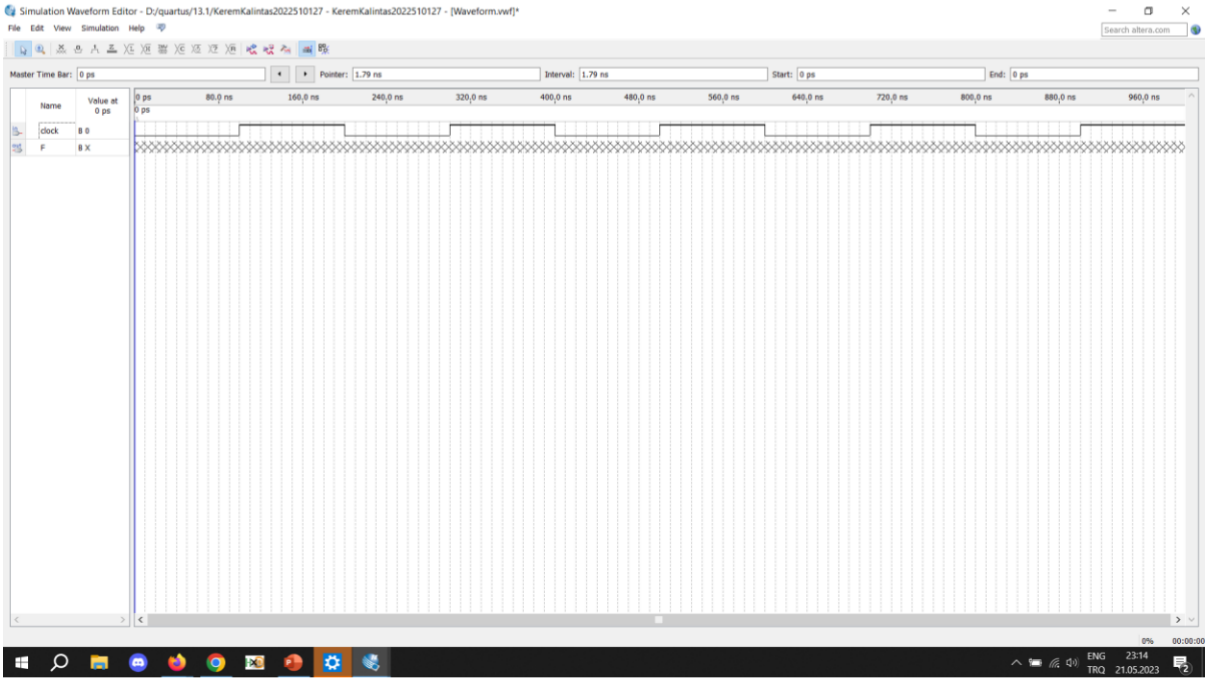
CME1214 Logic Design Homework 4

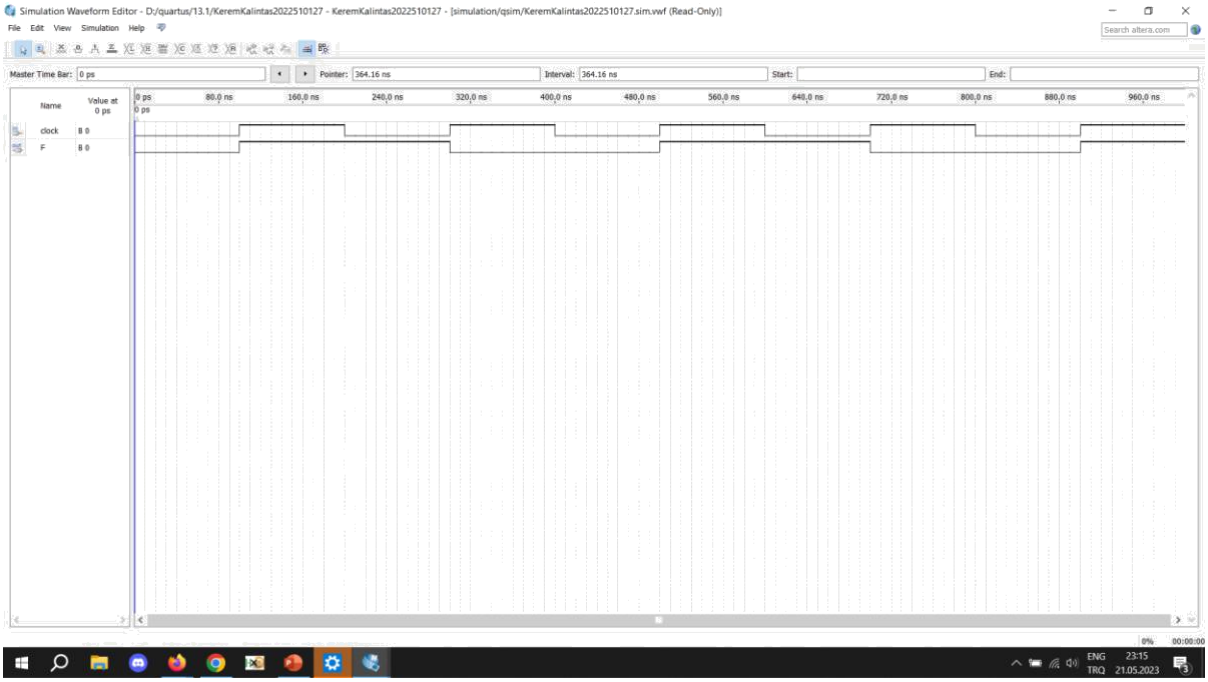
Divide-by-2 using a D Flip Flop


CLK
F
T.C.
DOKUZ EYLÜL ÜNİVERSİTESİ
Adı KEREM
Soyadı KALINTAŞ
Öğrenci No 2022510127
Birimi MÜHENDİSLİK FAK.
Bölümü/Prog. BİLGİSAYAR MÜH.
T.C. Kimlik No 50176719220

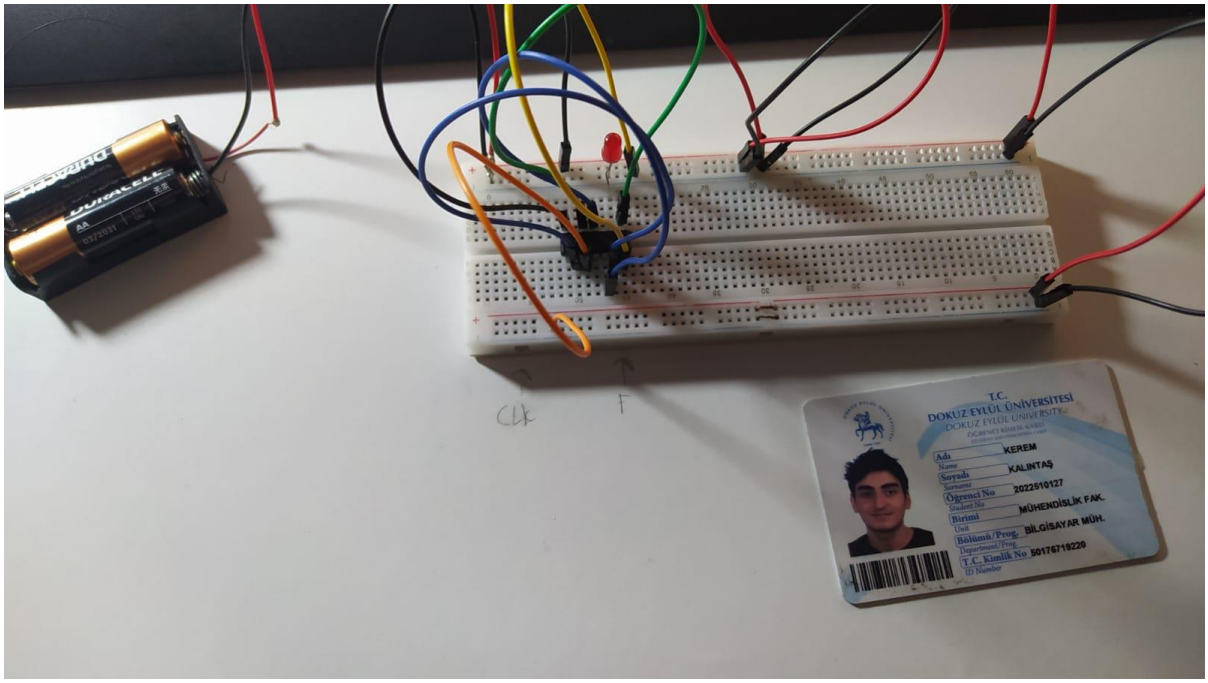

CLK
F
T.C.
DOKUZ EYLÜL ÜNİVERSİTESİ
DOKUZ EYLÜL UNIVERSITY
Adı
KEREM
Soyadı
KALINTAŞ
Öğrenci No
2022510127
Birimi
MÜHENDİSLİK FAK.
Bölümü / Prog.
BİLGİSAYAR MÜH.
T.C. Kimlik No
50176719220

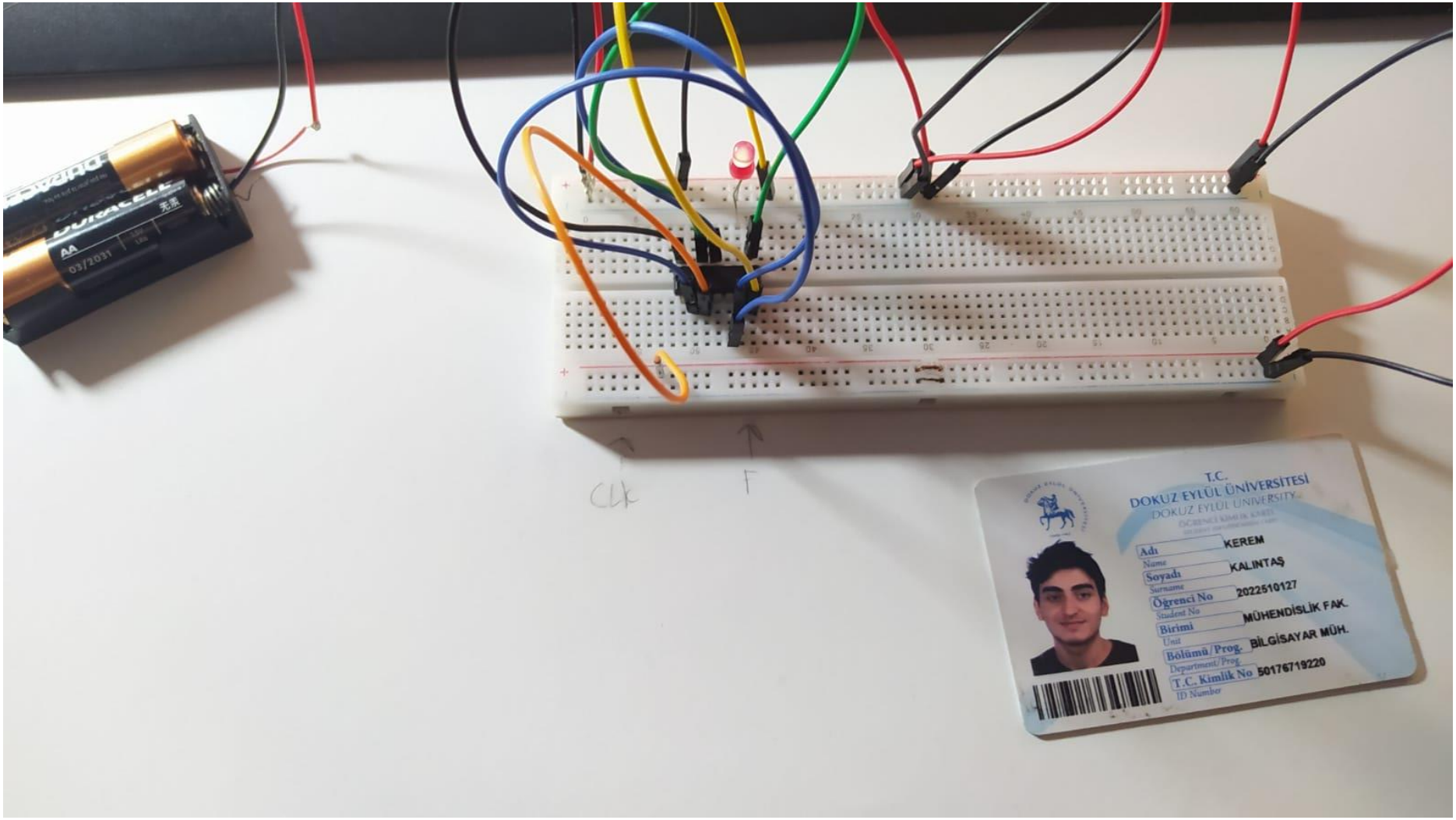

Quartus II 64-Bit - D:/quartus/13.1/KeremKalintas2022510127 - KeremKalintas2022510127
Project Navigator
Entity
Cyclone III: EP3C16F484C6
KeremKalintas2022510127
7474:inst
KeremKalintas2022510127.bdf
Compilation Report - KeremKalintas2022510127
7474
1PRN
1D
1CLRN
1CLK
2PRN
2D
2CLRN
2CLK
1Q
1QN
2Q
2QN
clock
INPUT
VCC
OUTPUT
F
inst
D FLIP-FLOP
Tasks
Flow: Compilation
Customize...
Task
Compile Design
Analysis & Synthesis
Fitter (Place & Route)
Assembler (Generate programming files)
TimeQuest Timing Analysis
EDA Netlist Writer
Program Device (Open Programmer)
Type ID Message
204019 Generated file KeremKalintas2022510127_vhd.sdo in folder "D:/quartus/13.1/simulation/modelsim/" for EDA simulation tool
Quartus II 64-Bit EDA Netlist Writer was successful. 0 errors, 0 warnings
293000 Quartus II Full Compilation was successful. 0 errors, 11 warnings
System
Processing (118)
ENG
TRQ
23:14
21.05.2023

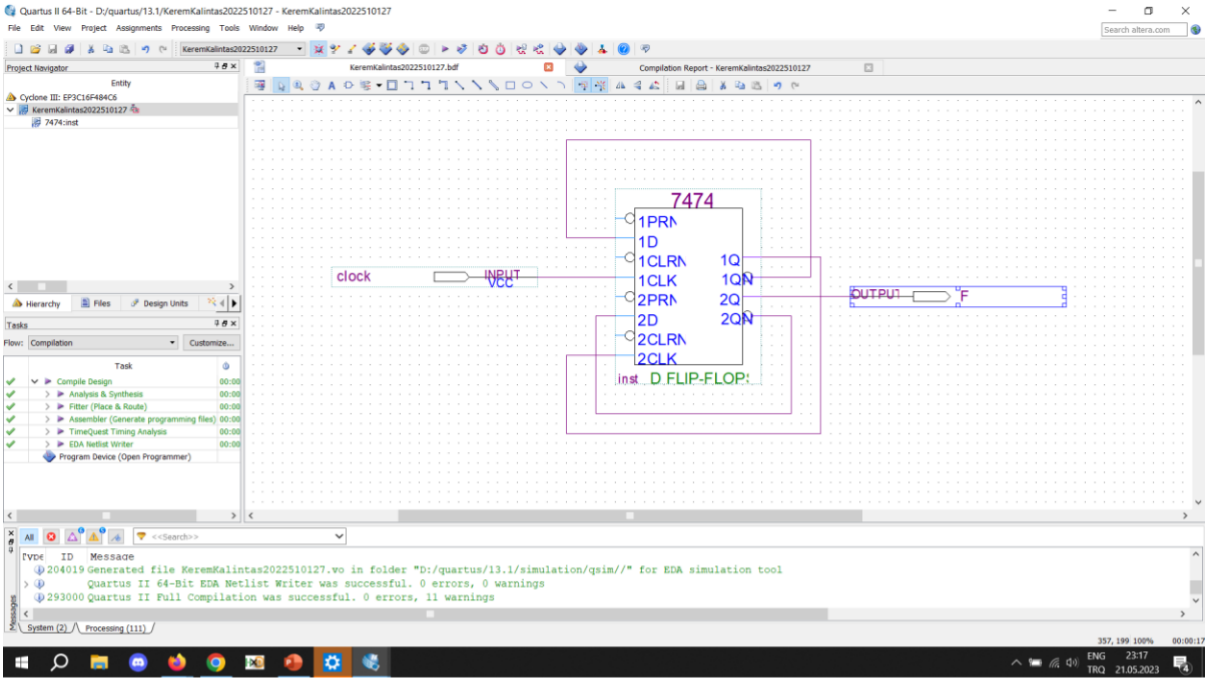

Simulation Waveform Editor - D:/quartus/13.1/KeremKalintas2022510127 - KeremKalintas2022510127 - [Waveform.vwf]*
Master Time Bar:
Pointer:
Interval:
Start:
End:
Name
Value at 0 ps
clock
F
0 ps
80,0 ns
160,0 ns
240,0 ns
320,0 ns
400,0 ns
480,0 ns
560,0 ns
640,0 ns
720,0 ns
800,0 ns
880,0 ns
960,0 ns
ENG
TRQ
23:14
21.05.2023

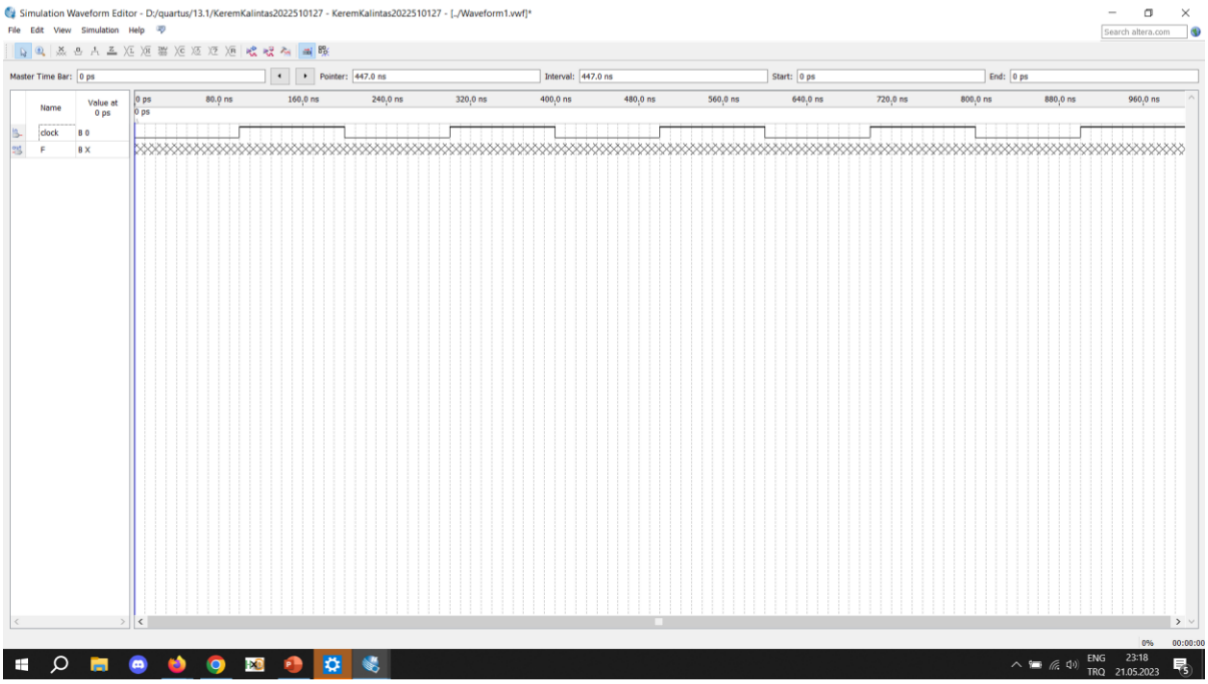

Simulation Waveform Editor - D:/quartus/13.1/KeremKalintas2022510127 - KeremKalintas2022510127 - [simulation/qsim/KeremKalintas2022510127.sim.vwf (Read-Only)]
File Edit View Simulation Help
Search altera.com
Master Time Bar: 0 ps
Pointer: 364.16 ns
Interval: 364.16 ns
Start:
End:
Name
Value at 0 ps
clock
F
0 ps
80,0 ns
160,0 ns
240,0 ns
320,0 ns
400,0 ns
480,0 ns
560,0 ns
640,0 ns
720,0 ns
800,0 ns
880,0 ns
960,0 ns
0%
00:00:00
ENG
TRQ
23:15
21.05.2023

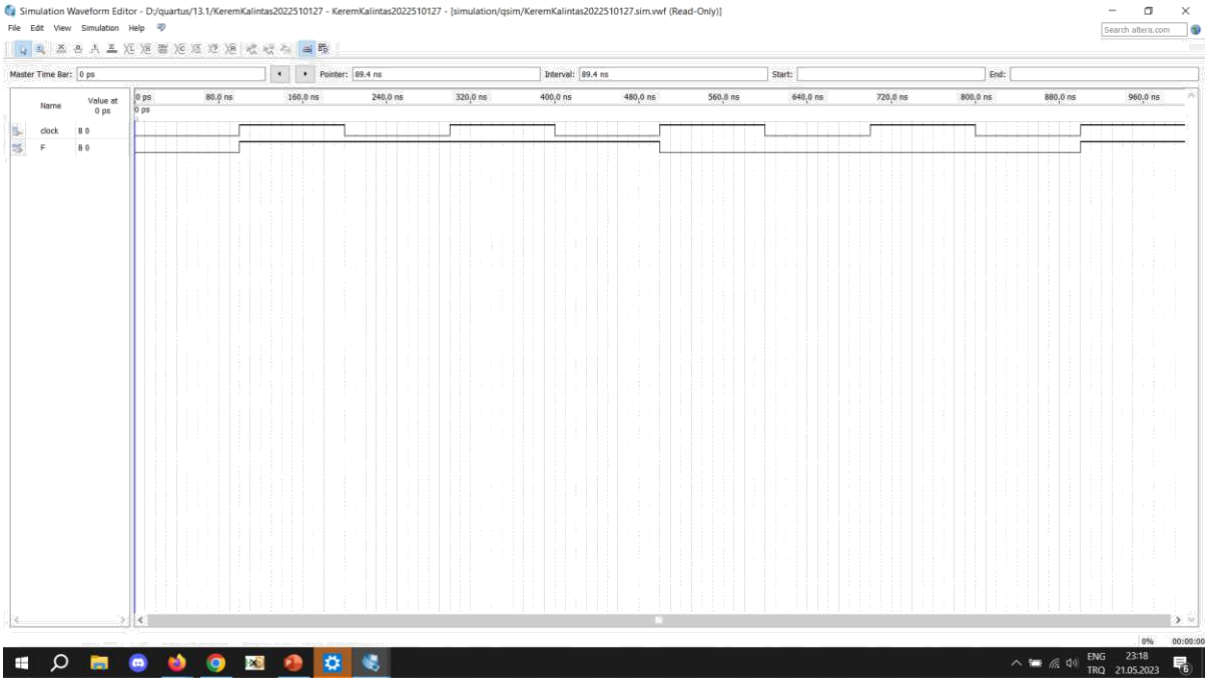
Divide-by-4 using D flip flops


DURACELL
AA
CLK
F
T.C.
DOKUZ EYLÜL ÜNİVERSİTESİ
DOKUZ EYLÜL UNIVERSITY
Adı
Name
KEREM
Soyadı
Surname
KALINTAŞ
Öğrenci No
Student No
2022510127
Birimi
Unit
MÜHENDİSLİK FAK.
Bölümü/Prog.
Department/Prog.
BİLGİSAYAR MÜH.
T.C. Kimlik No
ID Number
50176719220

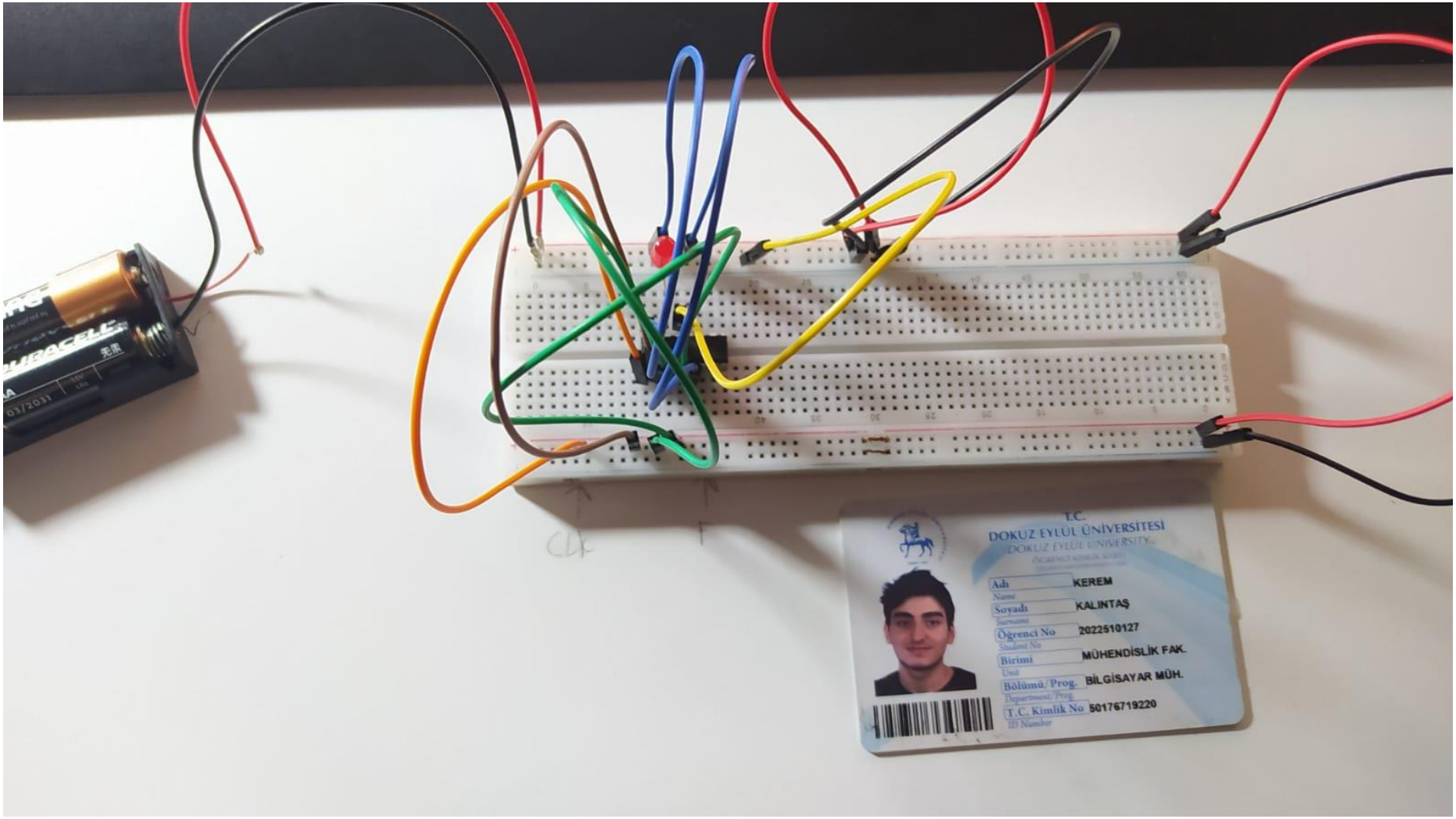

CLK
T.C.
DOKUZ EYLÜL ÜNİVERSİTESİ
DOKUZ EYLÜL UNIVERSITY
Adı
Name
KEREM
Soyadı
Surname
KALINTAŞ
Öğrenci No
Student No
2022510127
Birimi
Unit
MÜHENDİSLİK FAK.
Bölümü/Prog.
Department/Prog.
BİLGİSAYAR MÜH.
T.C. Kimlik No
ID Number
50176719220

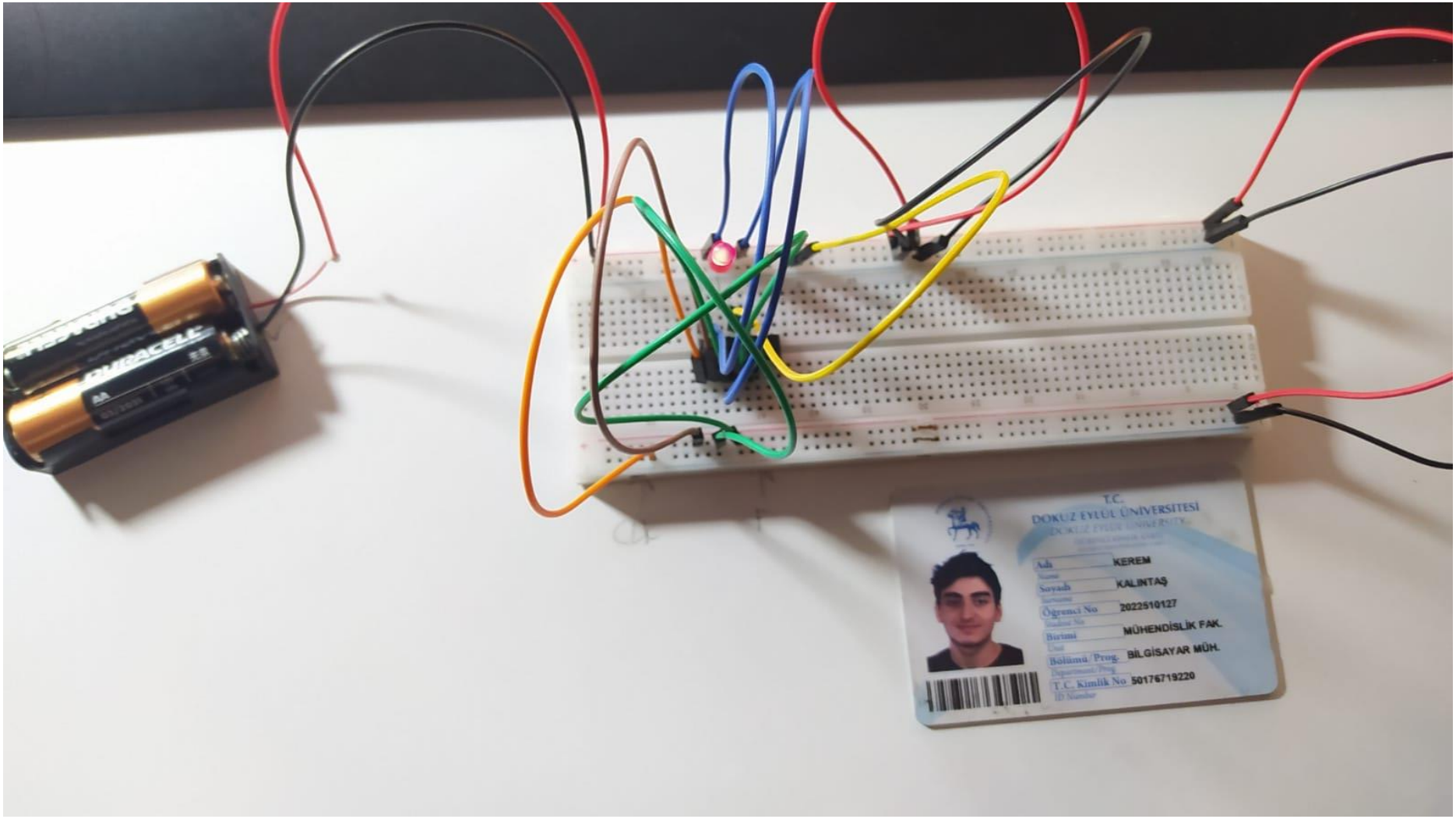

Quartus II 64-Bit - D:/quartus/13.1/KeremKalintas2022510127 - KeremKalintas2022510127
7474
1PRN
1D
1CLRN
1CLK
2PRN
2D
2CLRN
2CLK
1Q
1QN
2Q
2QN
clock
INPUT
VCC
OUTPUT
F
inst
D FLIP-FLOP:
Compilation Report - KeremKalintas2022510127
Compile Design
Analysis & Synthesis
Fitter (Place & Route)
Assembler (Generate programming files)
TimeQuest Timing Analysis
EDA Netlist Writer
Program Device (Open Programmer)
204019 Generated file KeremKalintas2022510127.vo in folder "D:/quartus/13.1/simulation/qsim//" for EDA simulation tool
Quartus II 64-Bit EDA Netlist Writer was successful. 0 errors, 0 warnings
293000 Quartus II Full Compilation was successful. 0 errors, 11 warnings

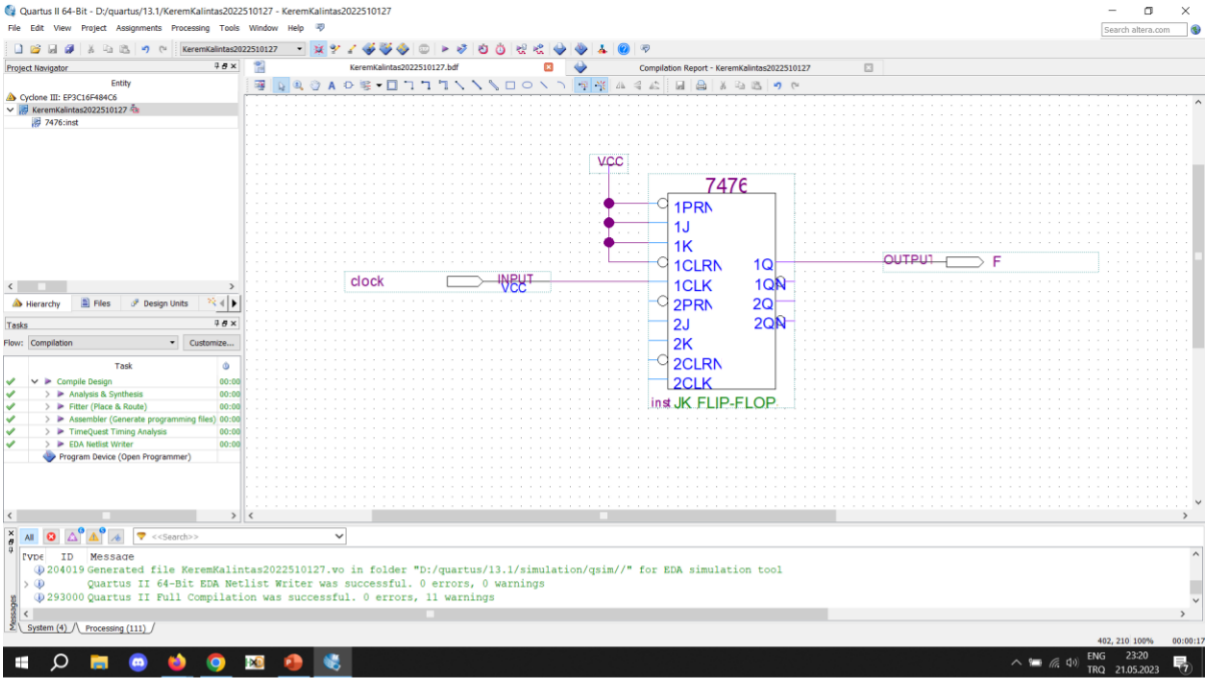

Simulation Waveform Editor - D:/quartus/13.1/KeremKalintas2022510127 - KeremKalintas2022510127 - [../Waveform1.vwf]*
Master Time Bar:
Pointer:
Interval:
Start:
End:
Name
Value at 0 ps
clock
F
0 ps
80,0 ns
160,0 ns
240,0 ns
320,0 ns
400,0 ns
480,0 ns
560,0 ns
640,0 ns
720,0 ns
800,0 ns
880,0 ns
960,0 ns

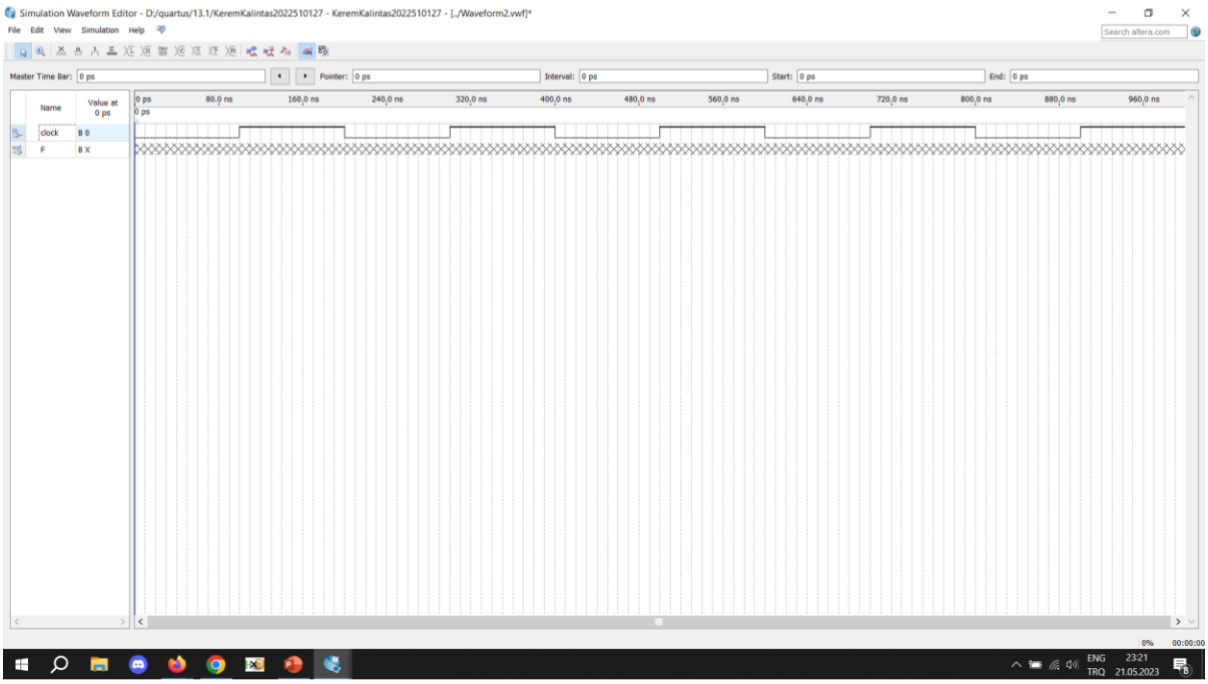

Simulation Waveform Editor - D:/quartus/13.1/KeremKalintas2022510127 - KeremKalintas2022510127 - [simulation/qsim/KeremKalintas2022510127.sim.vwf (Read-Only)]
File Edit View Simulation Help
Search altera.com
Master Time Bar: 0 ps
Pointer: 89.4 ns
Interval: 89.4 ns
Start:
End:
Name
Value at 0 ps
clock
F
0 ps
80,0 ns
160,0 ns
240,0 ns
320,0 ns
400,0 ns
480,0 ns
560,0 ns
640,0 ns
720,0 ns
800,0 ns
880,0 ns
960,0 ns
ENG
TRQ
23:18
21.05.2023

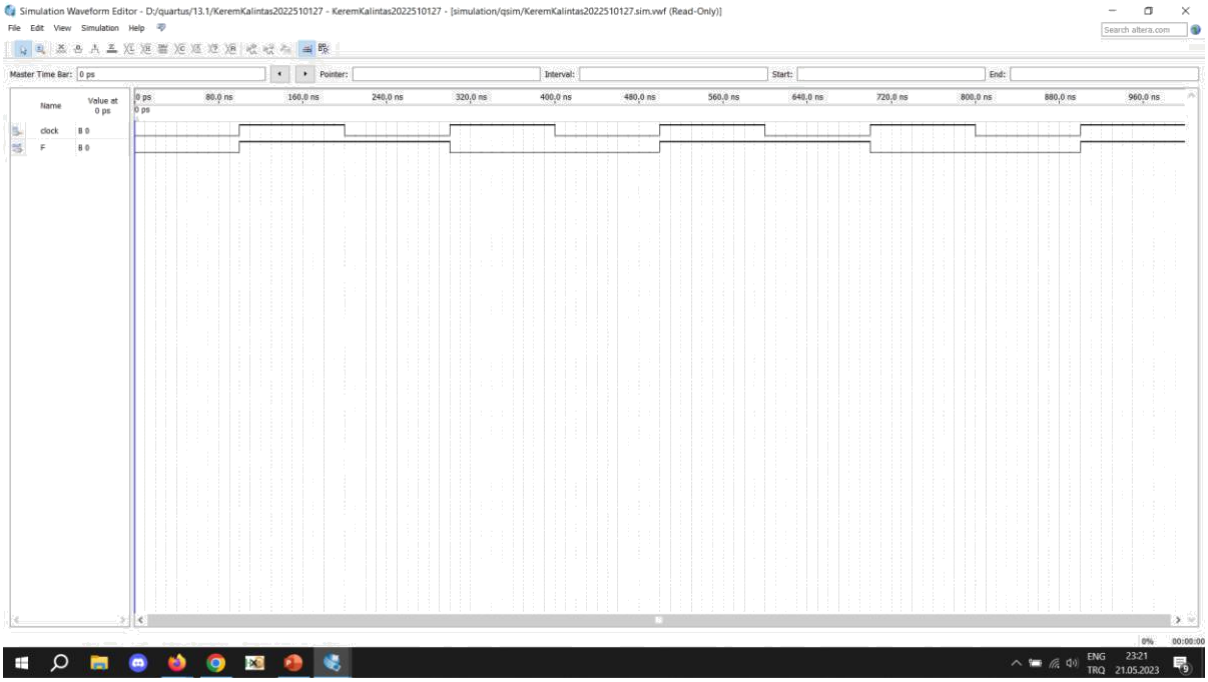
Divide-by-2 using a JK Flip Flop


T.C.
DOKUZ EYLÜL ÜNİVERSİTESİ
Adı
Name
KEREM
Soyadı
Surname
KALINTAŞ
Öğrenci No
Student No
2022510127
Birimi
Unit
MÜHENDİSLİK FAK.
Bölümü/Prog.
Department/Prog.
BİLGİSAYAR MÜH.
T.C. Kimlik No
ID Number
50176719220

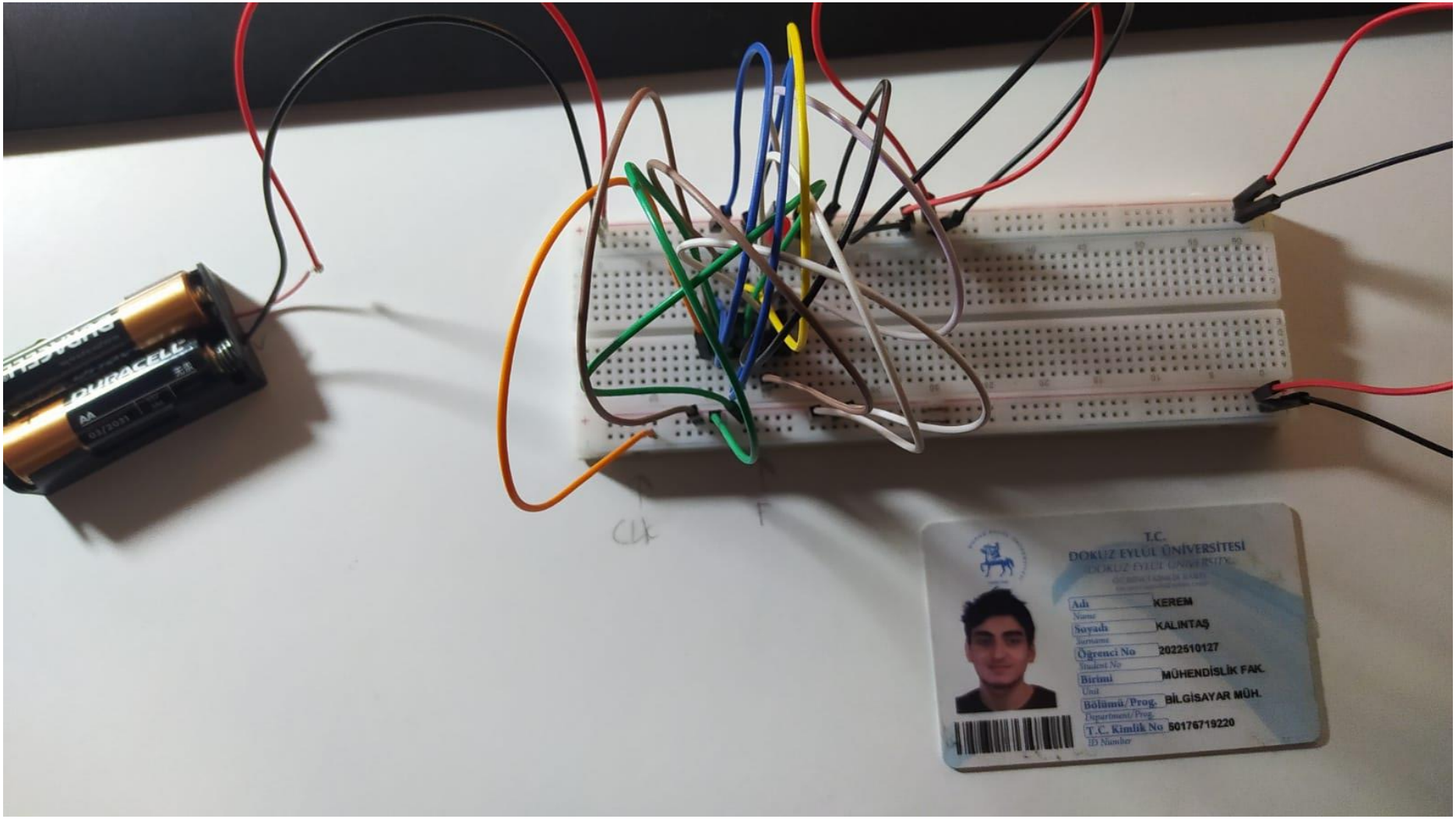

DURACELL
T.C.
DOKUZ EYLÜL ÜNİVERSİTESİ
Adı KEREM
Soyadı KALINTAŞ
Öğrenci No 2022510127
Birimi MÜHENDİSLİK FAK.
Bölümü/Prog. BİLGİSAYAR MÜH.
T.C. Kimlik No 50176719220

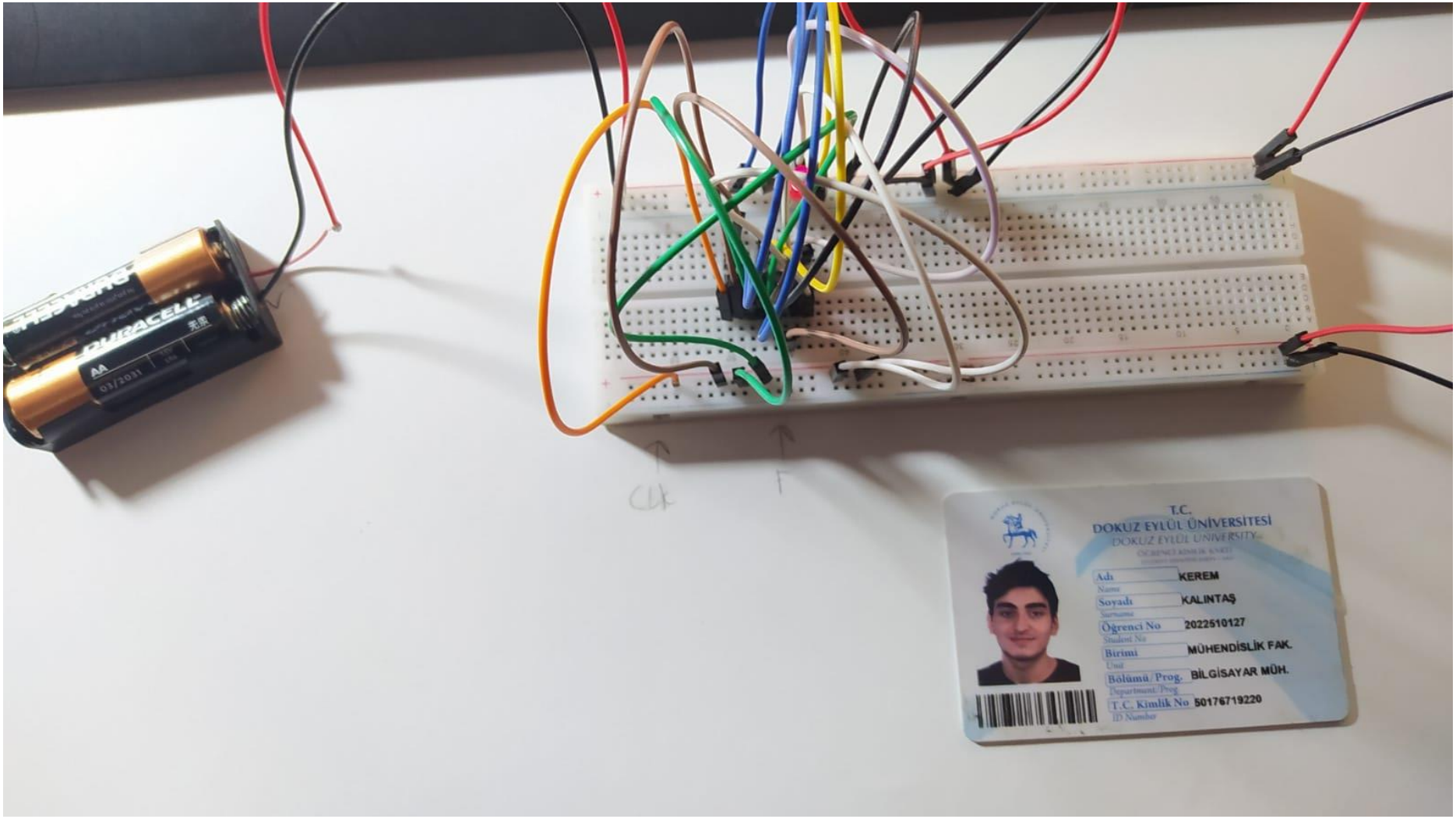

Quartus II 64-Bit - D:/quartus/13.1/KeremKalintas2022510127 - KeremKalintas2022510127
VCC
7476
1PRN
1J
1K
1CLRN
1CLK
2PRN
2J
2K
2CLRN
2CLK
1Q
1QN
2Q
2QN
clock
INPUT
VCC
OUTPUT
F
inst
JK FLIP-FLOP
Compile Design
Analysis & Synthesis
Fitter (Place & Route)
Assembler (Generate programming files)
TimeQuest Timing Analysis
EDA Netlist Writer
Program Device (Open Programmer)
204019 Generated file KeremKalintas2022510127.vo in folder "D:/quartus/13.1/simulation/qsim//" for EDA simulation tool
Quartus II 64-Bit EDA Netlist Writer was successful. 0 errors, 0 warnings
293000 Quartus II Full Compilation was successful. 0 errors, 11 warnings

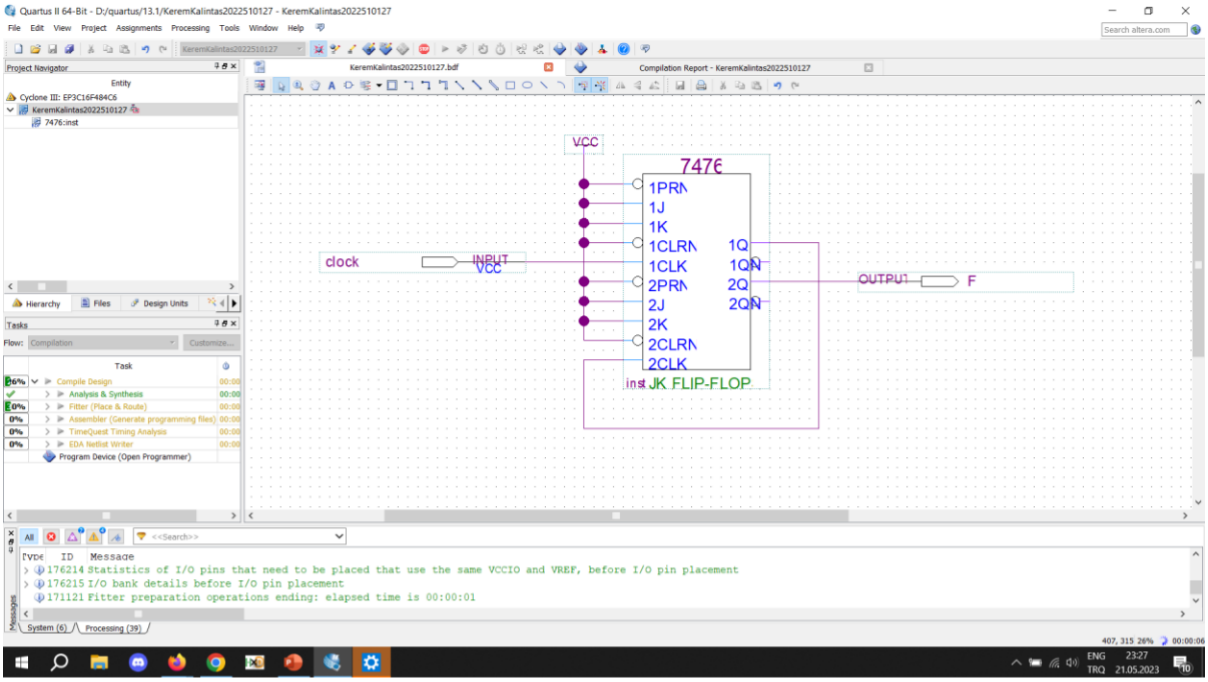

Simulation Waveform Editor - D:/quartus/13.1/KeremKalintas2022510127 - KeremKalintas2022510127 - [../Waveform2.vwf]*
clock
F

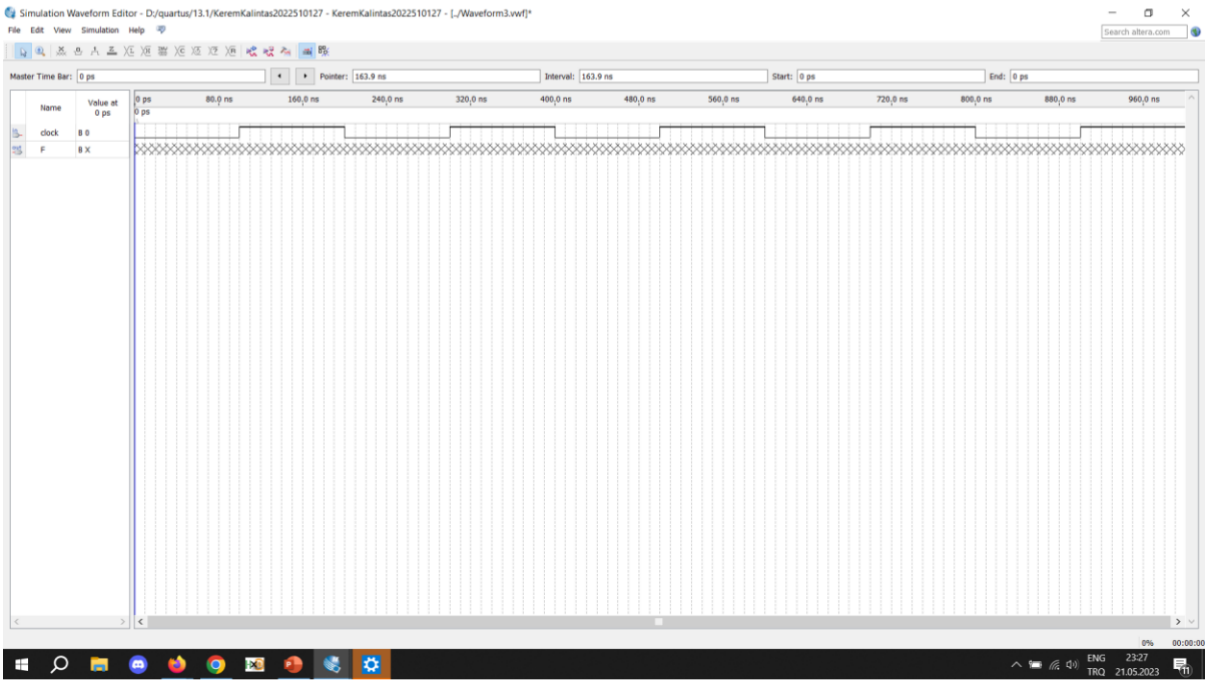

Simulation Waveform Editor - D:/quartus/13.1/KeremKalintas2022510127 - KeremKalintas2022510127 - [simulation/qsim/KeremKalintas2022510127.sim.vwf (Read-Only)]
File Edit View Simulation Help
Search altera.com
Master Time Bar: 0 ps
Pointer:
Interval:
Start:
End:
Name
Value at 0 ps
clock
F
0 ps
80,0 ns
160,0 ns
240,0 ns
320,0 ns
400,0 ns
480,0 ns
560,0 ns
640,0 ns
720,0 ns
800,0 ns
880,0 ns
960,0 ns
ENG
TRQ
23:21
21.05.2023

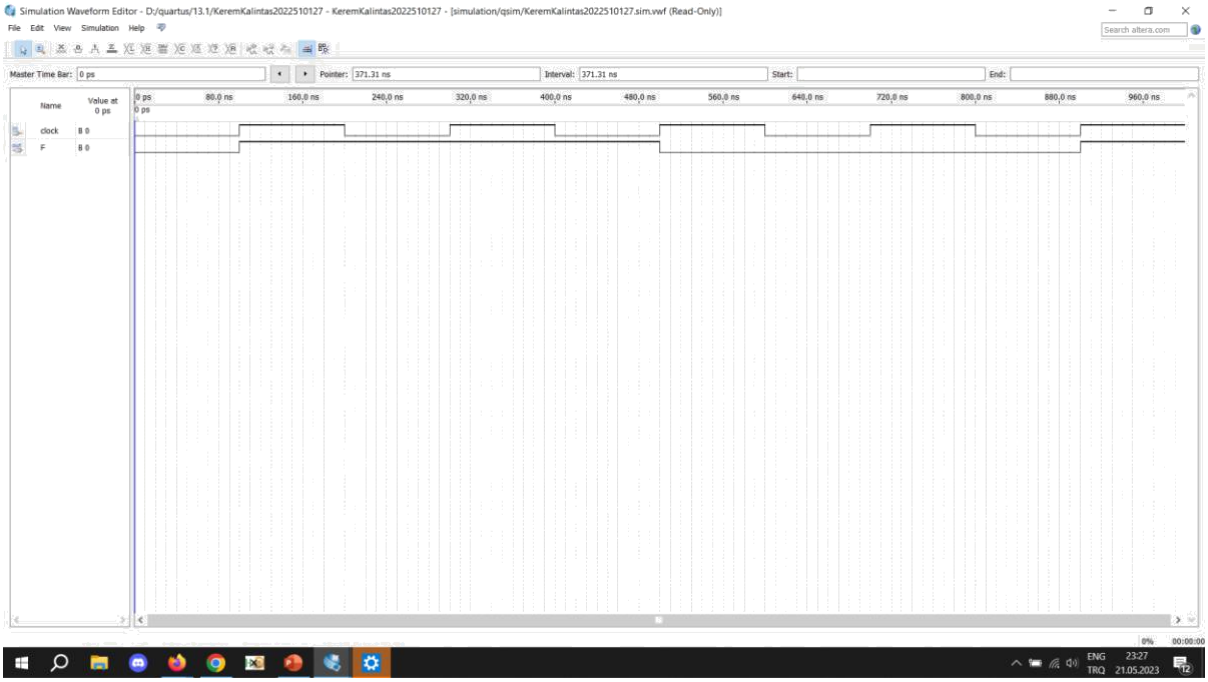
Divide-by-4 using JK Flip Flops


DURACELL
AA
CLK
F
T.C.
DOKUZ EYLÜL ÜNİVERSİTESİ
Adı
Name
KEREM
Soyadı
Surname
KALINTAŞ
Öğrenci No
Student No
2022510127
Birimi
Unit
MÜHENDİSLİK FAK.
Bölümü/Prog.
Department/Prog.
BİLGİSAYAR MÜH.
T.C. Kimlik No
ID Number
50176719220


DURACELL
AA
T.C.
DOKUZ EYLÜL ÜNİVERSİTESİ
DOKUZ EYLÜL UNIVERSITY
Adı KEREM
Soyadı KALINTAŞ
Öğrenci No 2022510127
Birimi MÜHENDİSLİK FAK.
Bölümü/Prog. BİLGİSAYAR MÜH.
T.C. Kimlik No 50176719220


Quartus II 64-Bit - D:/quartus/13.1/KeremKalintas2022510127 - KeremKalintas2022510127
VCC
7476
1PRN
1J
1K
1CLRN
1CLK
2PRN
2J
2K
2CLRN
2CLK
1Q
1QN
2Q
2QN
clock
INPUT
VCC
OUTPUT
F
inst JK FLIP-FLOP
Compile Design
Analysis & Synthesis
Fitter (Place & Route)
Assembler (Generate programming files)
TimeQuest Timing Analysis
EDA Netlist Writer
Program Device (Open Programmer)
176214 Statistics of I/O pins that need to be placed that use the same VCCIO and VREF, before I/O pin placement
176215 I/O bank details before I/O pin placement
171121 Fitter preparation operations ending: elapsed time is 00:00:01


Simulation Waveform Editor - D:/quartus/13.1/KeremKalintas2022510127 - KeremKalintas2022510127 - [../Waveform3.vwf]*
clock
F


Simulation Waveform Editor - D:/quartus/13.1/KeremKalintas2022510127 - KeremKalintas2022510127 - [simulation/qsim/KeremKalintas2022510127.sim.vwf (Read-Only)]
File Edit View Simulation Help
Search altera.com
Master Time Bar: 0 ps
Pointer: 371.31 ns
Interval: 371.31 ns
Start:
End:
Name
Value at 0 ps
clock
F
0 ps
80,0 ns
160,0 ns
240,0 ns
320,0 ns
400,0 ns
480,0 ns
560,0 ns
640,0 ns
720,0 ns
800,0 ns
880,0 ns
960,0 ns
ENG
TRQ
23:27
21.05.2023