5. (4 points)

Given the code segment below, compute the total execution time in clock cycles and picoseconds (ps) for the execution of this code on the Single Cycle and Pipelined datapaths. You may assume a clock cycle time of 800ps on the Single Cycle datapath and 200ps on the Pipelined datapath. The Pipelined datapath **determines branch in the ID stage** and implements both forwarding and stalling (load-use stall) as shown in the textbook and lectures. The datapath also implements flushing for the instruction following the branch. You do **not** need to add pipeline start-up time.

```
04 SUB  X1,XZR,XZR
08 ADDI X2,XZR,#400
12 ADDI X3,XZR,#0
16 LDUR X4,[X1,#200]
20 ADDI X1,X4,#8
24 ADDI X2,X2,#8
28 SUBI X5,X3,#10
32 ADDI X3,X3,#1
36 CBNZ X5,#-5
40 ADD  X5,X1,X1
```

Datapath	Total Number of Clock Cycles (cc)	Total Execution time picoseconds (ps)
Single Cycle	70	56000
Pipelined	91	18200