EXERCISE

1. *Let's consider the **intra- and inter-loop dependences** in the following assembly: Complete the following table by inserting all types of true-data-dependences, anti-dependences and output dependences for each instruction:*

I#	TYPE OF INSTRUCTION	ANALYSIS OF DEPENDECES: 1. True data dependence with I# for $Fx 2. Anti-dependence with I# for $Fy 3. Output-dependence with I# for $Fz
I0	`LOOP: LD $F0, 0($R1)`	Output dependence with I0 at the next iteration for $F0
I1	`FADD $F4,$F0,$F2`	True data dependence with I0 for $F0 Output dependence with I1 at the next iteration for $F4
I2	`SD $F4,0($R1)`	True data dependence with I1 for $F4
I3	`ADDUI $R1,$R1,4`	Anti dependence with I0 for $R1 Anti dependence with I2 for $R1 Output dependence with I3 at the next iteration for $R1
I4	`BNE $R1,$R2,LOOP`	True data dependence with I3 for $R1

EXERCISE 1 – from the exam held on 19 June 2024

2. *Let's consider only the **intra-loop dependences** in the following assembly: Complete the following table by inserting all types of true-data-dependences, anti-dependences and output dependences for each instruction:*

I#	TYPE OF INSTRUCTION	ANALYSIS OF DEPENDECES: 4. True data dependence with I# for $Fx 5. Anti-dependence with I# for $Fy 6. Output-dependence with I# for $Fz
I0	`LOOP: LD $F2, 0($R1)`	None
I1	`LD $F4, 0($R2)`	None
I2	`FADD $F4,$F2,$F4`	True data dependence with I0 for $F2 True data dependence with I1 for $F4 Output dependence with I1 for $F4
I3	`SD $F4,0($R1)`	True data dependence with I2 for $F4
I4	`ADDUI $R1,$R1,4`	Anti dependence with I0 for $R1 Anti dependence with I3 for $R1
I5	`ADDUI $R2,$R2,4`	Anti dependence with I1 for $R2
I6	`BNE $R1,$R3,LOOP`	True data dependence with I4 for $R1