King Saud University

College of Computer and Information Sciences

Department of Computer Science

CSC 220: Computer Organization

Lab Project 1.0

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Project Description: The aim of this project is to design the **8-bit** Function Unit Combining Arithmetic Logic Unit (ALU) and a Shifter that can perform the operations given in table 1 below.

a. Use X and Y as 8 bits input and F as 8 bits output as shown in Figure 1.
b. S0,S1,S2 and S3 represent the selction code in the operation set table
c. Three statue bits V (over flow), C (carry), N (negative) and are related to arrithmatic operations and statue bit Z (zero) is relataed to both arrithmatic and logic operation.
d. Test your designed Function Unit with necessary tables.

Marking: Total marks for the project is five (5). Each student needs to submit the project and demonestrate it individually.

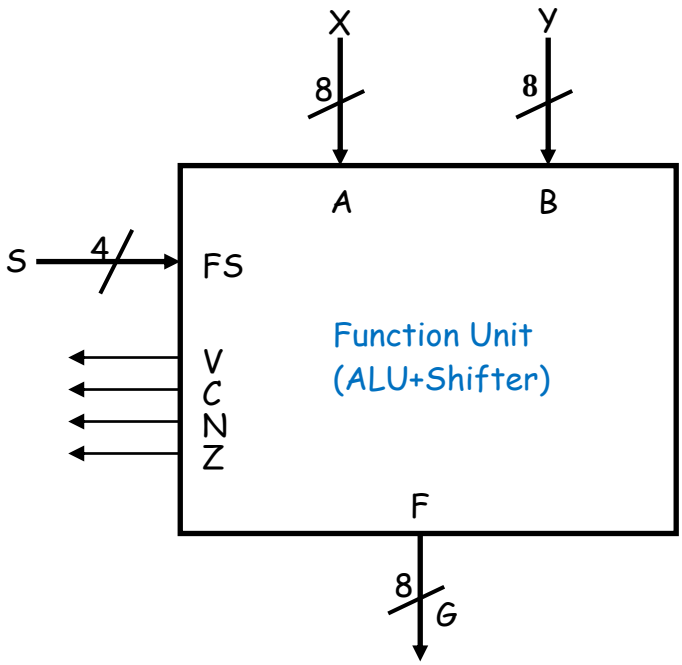
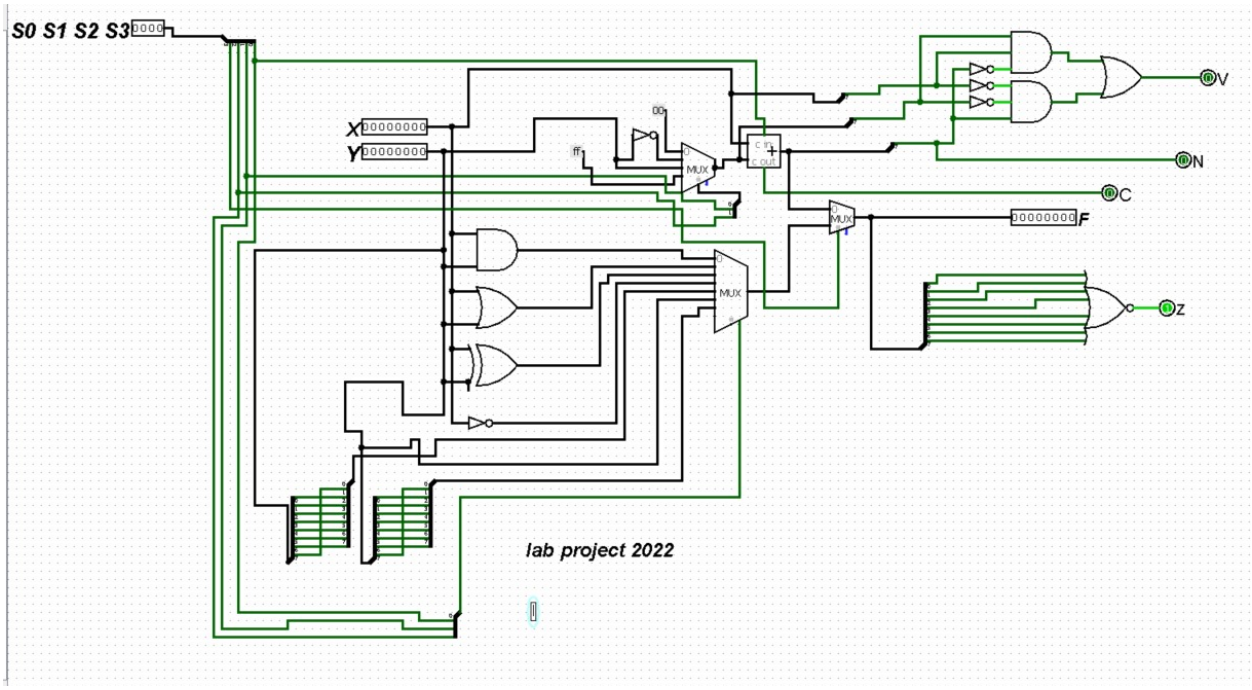


Figure 1: Block diagram of 8-bit Function Unit

Table1 : Set of operations

FS	Operation
0000	F = A
0001	F = A + 1
0010	F = A + B′
0011	F = A + B′ + 1
0100	F = A + B
0101	F = A + B + 1
0110	F = A - 1
0111	F = A
1000	F = A $\wedge$ B (OR)
1001	F = A $\vee$ B (XOR)
1010	F = A $\oplus$ B (AND)
1011	F = A'
1100	F = B
1101	F = sr B (rotate right)
1110	F = sl B (rotate left)



Project link:
https://github.com/PYTHON01100100/CSC220_KSU_1443/tree/main/lab%20project