

ICS Homework 2

Feb, 23, 2022

1 HCL Programming (Composition)

Figure 1 is a hardware module called HALF-ADDER, which can add two one-bit value A and B . S is the sum and C is the carry.

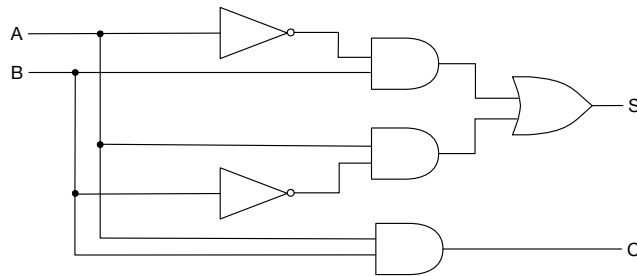


Figure 1: Half adder

Can you write the HCL expression of C :

Can you write the HCL expression of S :

2 System Software

2.1 User & Kernel Mode

```
1 int array[10];
2 void func1(void) {
3     array[5000] = 40;
4     return 0;
5 }
6
7 void func2(void) {
8     array[5] = 40;
9     return 0;
10 }
```

During the execution of the two functions given above, will the control flow changes from user mode to kernel mode?

2.2 Concurrency

In table below, control flow for a series of processes is shown. A cell with * means the process is executed at current time. Among these processes, which pairs run concurrently and which pairs are sequential? (Suppose all processes finish executing at the end of time.)

Time	A	B	C	D
0	*			
1			*	
2				*
3	*			
4			*	
5		*		
6	*			