Shanghai Jiaotong University
Introduction to Computing Systems

Introduction to Computing Systems Experiment3

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1 How to Use my Program

- First, use the asm button in LC3edit to turn into obj.
- Open Simulate, Load Program
- set the breakpoint in x3069

2 How my Program Works

I explain my code according to symbolic names.

2.1 PROMPT

In PROMPT, I output the current state of the rocks on screen using TRAP x22. Note that NEWLINE(Enter) is x000A, so we load it in R0 and begin a new line using TRAP x21.

2.2 CHECKPLAYER

We store which player in R1, if it is 0, it indicates player 1; if it is 1, it indicates player2.
We check player to see if we wanna branch to PL1 or PL2.

2.3 PL1 AND PL2

PL1 and PL2 outputs the sentence which indicates whose turn it is .

2.4 INPUT

We use R0WINPUT to store which row the player chooses, and ROCKINPUT to store how many rocks the player removes. We use TRAP X21 and TRAP X20 to GETC and OUT.

2.5 CHECKROW

In CHECKROW, we check which row the player chooses, and go to corresponding INPUTA, INPUTB and INPUTC.

2.6 CALCULATE

In CALCULATE, first we LD R4 with ROCKINPUT, which is the number of rocks to be removed. And we check if it is a positive valid number. If not so, we jump to INVALIDSUB, where we output the invalid string. And we add this number with the rocks remain in each row to see if it's invalid, therefore, to check whether to go to INVALIDSUB. If it is valid, we subtract ROCKINPUT from the remaining rocks to get the number of rocks to be left after this turn.

2.7 INPUTA,INPUTB,INPUTC

Load the remaining number of rocks, branch to CALCULATE, and then store remaining nubmer of rocks.