CSE 2130

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Homework #4

(7.4)

Symbol	Address
Test	x301F
Save3	x3029
Save2	x302A
Finish	x3027

Symbol table

(7.5) a.)
```
.ORIG x3000 ; Addresses the placement of instructions
LD R2, zero ; Load Label zero into register R2
LD R0, M0 ; Load M0 into register R0, M0 is a Label
LD R1, M1 ; Load Label M1 into register R1
Loop BRz Done ; jump to Done when result
                is zero and Loop until R1 is zero.
ADD R2, R2, R0 ; Add R0 to R2 ← register
ADD R1, R1, -1 ; Add -1 to R1 ← register
BR Loop ; Branch Loop
Done ST R2, Result ; Store Result in R2 ← register
HALT ; halts program
Result .Fill x0000 ; Label Result is addressed to x0000 ← Fill
zero .Fill x0000 ; Label zero is addressed to x0000
M0 .Fill x0004 ; Label M0 is addressed to x0004
M1 .Fill x0803 ; Label M1 is addressed to x0803
.END ; End/Stops code run
```

The Program calculates the Product of M0 & M1

b.) Result will display the value 820A.

(7.9) The purpose of the .END psuedo-op is to used to stop the code run whereas HALT is an instruction used to stop the machine. Also .END is not executable but HALT is.

(8.1) A stack is "an abstract data structure which uses the last in first out (LIFO) access policy." The element at top of the stack is the first accessed element.

(8.8) a.) After Push F the stack contains [AF]

b.) The stack contains the most elements at either PUSH J or PUSH K.

c.) After PUSH M the Stack contains [ABM]

(9.5) The purpose of bit[15] in the KBSR is to check whether a new character has been recieved or not. It is a ready bit used to synchronize and let the processor know when an input has occured.

(17.1) a.) RunningSum(10) calls to RunningSum 10 times.

b.) RunningSum(n) calls RunningSum n times after the first which means it is called ((n-1)+1) = [n times]