

<u>Help</u>

selfpoised >

<u>Course</u> <u>Progress</u> <u>Dates</u> <u>Discussion</u>

★ Course / 12. Procedures and Stacks / Lecture Videos (35:16)





 \square Bookmark this page

■ Calculator

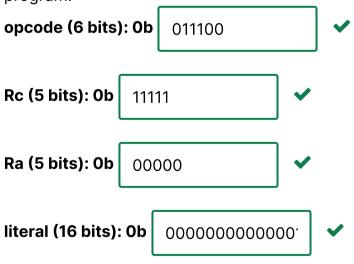
LE12.3.1 Stack Detective

13/13 points (ungraded)

You are given the following incomplete listing of a C program and its translation to Beta assembly code:

```
ones: PUSH(LP)
       PUSH(BP)
       MOVE(SP, BP)
       ALLOCATE (2)
       PUSH(R1)
       LD(BP, -12, R0)
       ANDC(R0, 1, R1)
       ST(R1, 0, BP)
       SHRC(R0, 1, R1)
       ST(R1, 4, BP)
       BEQ(R0, labl)
xx:
zz:
       LD(BP, 4, R1)
       PUSH(R1)
       BR(ones, LP)
уу:
       DEALLOCATE(1)
       LD(BP, 0, R1)
       ADD(R1, R0, R0)
labl: POP(R1)
       MOVE(BP, SP)
       POP(BP)
       POP(LP)
       JMP(LP)
```

1. Fill in the binary value of the instruction stored at the location tagged **xx** in the above assembly-language program.



2. What is the missing C source corresponding to the ??? in the above listing?

	•	•	•	•	
\bigcirc	ones(rest + lowbit)				
\bigcirc	lowbit				
\bigcirc	ones(rest)				
	ones(rest) + lowbit				

3. Suppose the instruction bearing the tag **zz** were eliminated from the assembly language program. Would the program continue to work?

O Yes			
O No			

The procedure **ones** is called from an external procedure and its execution is interrupted just prior to the execution of the instruction tagged **xx**. The contents of a region of memory are shown to the left.

NB: All addresses and data values are shown in hex. The contents of **BP** are $0\times1C8$, and **SP** contains $0\times1D4$.

Address in Hex Contents in Hex

4 184: 188: 18C: 47 C4190: D4194: 1 198: 19C: **23** 22 1A0: **23** 1A4: 4C1A8: 1AC: 198 1 1B0: 11 1B4: **23** 1B8: 11 1BC: 4C1C0: 1B01C4: $BP \rightarrow 1C8$: 1 8 1CC: ??? 1D0: $SP \rightarrow 1D4$: 0

4. What was the argument to the *most recent* call to **ones**?

Most recent argument (HEX): x = 0x 11

5. What is the missing value marked ??? for the contents of location 1D0?

Contents of 1D0 (HEX): 0x 11

6. What is the hex address of the instruction tagged xx?

Address of xx (HEX): xx = 0x 38

7. What was the argument of the *original* call to **ones**?

Original argument (HEX): x = 0x 47

8. What is the hex address of the BR instruction that called ones originally?

Address of original call (HEX): 0x CO

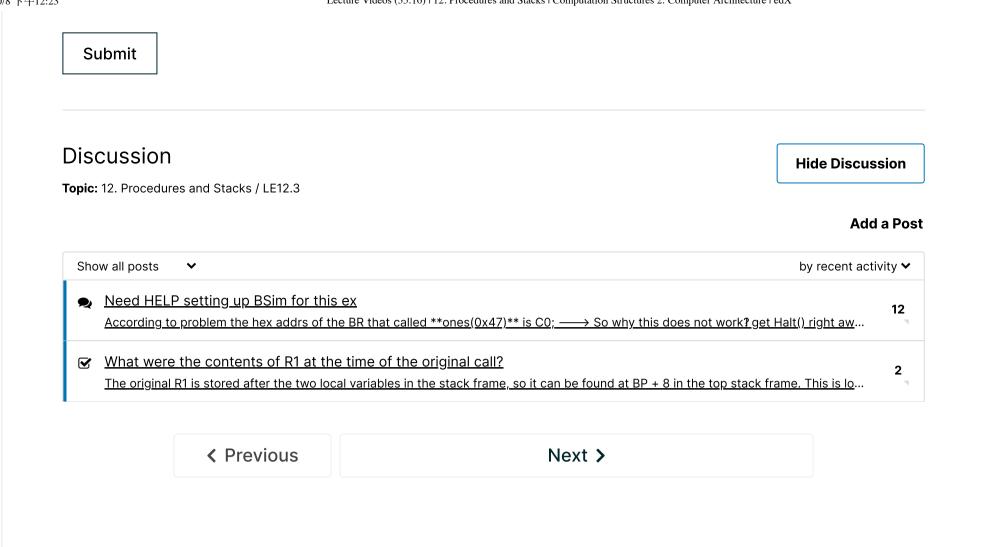
9. What were the contents of R1 at the time of the original call?

Original R1 contents (HEX): R1 = 0x 22

✓

10. What value will be returned to the original caller?

Return value for original call (HEX): 0x 4



© All Rights Reserved



edX

About

Affiliates

edX for Business

Open edX

Careers

News

Legal

Terms of Service & Honor Code

Privacy Policy

Accessibility Policy

Trademark Policy

<u>Sitemap</u>

Connect

Blog

Contact Us

Help Center

Media Kit

Donate



















© 2021 edX Inc. All rights reserved.

深圳市恒宇博科技有限公司 <u>粤ICP备17044299号-2</u>