

# Computer Architecture HW1 Report

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## HW1-1

The screenshot shows the Jupiter IDE interface. The main window displays assembly code with columns for Bkpt, Address, Machine Code, Basic Code, and Source Code. The console shows the execution of a program that calculates the result of a recurrence relation  $T(n) = 5T(n/2) + 6n + 4$ , with  $T(1) = 2$ , for  $n = 10$ . The result is 884.

Bkpt	Address	Machine Code	Basic Code	Source Code
<input type="checkbox"/>	0x00010090	0x00400513	addi x10, x0, 4	addi a0, x0, 4
<input type="checkbox"/>	0x00010094	0x00000597	auipc x11, 0	la a1, msg2
<input type="checkbox"/>	0x00010098	0x06358593	addi x11, x11, 99	la a1, msg2
<input type="checkbox"/>	0x0001009c	0x00000073	ecall	ecall
<input type="checkbox"/>	0x000100a0	0x00100513	addi x10, x0, 1	addi a0, x0, 1
<input type="checkbox"/>	0x000100a4	0x005005b3	add x11, x0, x5	add a1, x0, t0
<input type="checkbox"/>	0x000100a8	0x00000073	ecall	ecall
<input type="checkbox"/>	0x000100ac	0x00a00513	addi x10, x0, 10	addi a0, x0, 10
<input type="checkbox"/>	0x000100b0	0x00000073	ecall	ecall

Console

This is HW1-1:  $T(n) = 5T(n/2) + 6n + 4$ ,  $T(1) = 2$   
Enter a number: 10  
The result is: 884

## HW1-2

The screenshot shows the Jupiter IDE interface. The main window displays assembly code with columns for Bkpt, Address, Machine Code, Basic Code, and Source Code. The console shows the execution of a program that calculates the result of a recurrence relation  $T(n) = 5T(n/2) + 6n + 4$ , with  $T(1) = 2$ , for  $n = 10$ . The result is 884.

Bkpt	Address	Machine Code	Basic Code	Source Code
<input type="checkbox"/>	0x00010000	0x00000317	auipc x6, 0	auipc x6, 0
<input type="checkbox"/>	0x00010004	0x02830067	jair x0, x6, 40	jair x0, x6, 40
<input type="checkbox"/>	0x00010008	0x00400513	addi x10, x0, 4	addi a0, x0, 4
<input type="checkbox"/>	0x0001000c	0x00000597	auipc x11, 0	la a1, msg3
<input type="checkbox"/>	0x00010010	0x10b58593	addi x11, x11, 267	la a1, msg3
<input type="checkbox"/>	0x00010014	0x00000073	ecall	ecall
<input type="checkbox"/>	0x00010018	0x014005b3	add x11, x0, x20	add a1, x0, x20
<input type="checkbox"/>	0x0001001c	0x00000073	ecall	ecall
<input type="checkbox"/>	0x00010020	0x00a00513	addi x10, x0, 10	addi a0, x0, 10

Console

This is HW1-2:  
Enter shift: 5  
Plaintext: hw good luck  
Ciphertext: nb0lttiqzhp