CS2208 – Assignment 5

Start

**MAIN** **POWER subroutine**

Return to MAIN

Get RESULT from stack and pop. Prepare returning value and store in stack

Multiply RETURN value by itself, store in y. Reserve space for RETURN value

Divide n by 2 and recurse

Decrease n by 1, store x in stack. Reserve space in stack for RESULT and recurse

True

Is n odd?

False

Set r0 to 1, push onto stack, then branch to RETURN

False

True

Is n == 0?

Push general registers, FP, and LR.

Space for local variable y created.

END

Result loaded into r0 and popped from stack. Store value in RESULT.

Call POWER subroutine

Define stack, x (r0), n (r1). Push onto stack and reserve place for return value

Start

Amount of stack frames for xn; n < 13.

|  |  |
| --- | --- |
| N | # of stack frames |
| 0 | 8 |
| 1 | 9 |
| 2 | 10 |
| 3 | 11 |
| 4 | 11 |
| 5 | 12 |
| 6 | 12 |
| 7 | 13 |
| 8 | 13 |
| 9 | 14 |
| 10 | 14 |
| 11 | 15 |
| 12 | 15 |