

Chapter 5

True/False

1. A link library contains procedures that have already been assembled into object code.
2. The `PROTO` directive is required when calling a library procedure.
3. The assembler knows the exact address of a library procedure.
4. The linker combines object files into an executable file.
5. Real-mode programs should link to `Irvine16.lib`.

Fill in the Blanks and Short Answer

6. Which file acts as a bridge between `Irvine32.lib` and `kernel32.dll`?
7. Which I/O device is used for standard input?
8. Which library procedure writes a single character to standard output?
9. Which library procedure locates the cursor at a specific row and column on the screen?
10. Which library procedure reads a 32-bit signed decimal integer from standard input?
11. Which library procedure displays the CPU flags and 32-bit registers?
12. Which library procedure generates a 32-bit pseudorandom integer in a caller-specified range?
13. Which library procedure writes an unsigned 32-bit integer to standard output in hexadecimal format?
14. Which library procedure reads a string from standard input?
15. Which register contains the offset of a character array when calling `GetCommandTail`?
16. Which register contains an integer before calling `WriteDec`?
17. Which register contains the starting address of data when calling `DumpMem`?
18. Write code that causes a 500 millisecond delay, using a library procedure.
19. Write a statement that moves a video color constant to `EAX`. The constant should represent black text on a white background, using the constants described in the `Irvine32.inc` file.
20. What will be the value of `EAX` when the following sequence of instructions has executed?

```
push 5
push 10
push 20
pop eax
```
21. What will be the value of `EAX` when the following sequence of instructions has executed?

```
push 5
push 10
pop ebx
pop eax
```
22. What will be the value of `ECX` when the following sequence of instructions has executed?

```
push 5
push 10
pop ebx
pop eax
pop ecx
```

Chapter 5

Multiple-Choice

(Some of the following questions have more than one correct answer. Circle all correct answers.)

23. Which of the following CALL instructions writes the contents of EAX to standard output as a signed decimal integer?
- a. call WriteInteger
 - b. call WriteDec
 - c. call WriteHex
 - d. call WriteInt
24. Which of the following code sequences assigns the value 10h to EBX?
- a.

```
mov  edx, 20h
push  edx
mov  ecx, 10h
push  ecx
pop   ebx
pop   edx
```
 - b.

```
mov  ecx, 10h
mov  edx, 20h
push  ecx
push  edx
pop   ebx
pop   edx
```
 - c.

```
push  20h
mov  ecx, 10h
push  ecx
pop   eax
pop   ebx
```
 - d.

```
push  30h
push  10h
push  20h
pop   edx
pop   ebx
pop   eax
```
25. The process of dividing a problem into general tasks, and then separating general tasks into more specific tasks is called . . .
- a. process-oriented design
 - b. functional decomposition
 - c. top-down design
 - d. object-oriented design
26. Which of the following are valid design criteria for the Integer Summation Program (Section 5.6)?
- a. separate procedures make the program run faster
 - b. separate procedures make the program's structure easier to understand

Chapter 5

- c. LOOP instructions might be out of range if all code were placed in the main procedure
 - d. the program is easier to maintain and understand when all the code is in a single procedure
27. Which of the following are true about the PUSH instruction?
- a. It decrements the stack pointer (by 2 or 4) and copies the operand into the stack at the location pointed to by the stack pointer.
 - b. It copies the operand into the stack at the location pointed to by the stack pointer, and then decrements the stack pointer (by 2 or 4).
 - c. It increments the stack pointer (by 2 or 4) and copies the operand into the stack at the location pointed to by the stack pointer.
 - d. It increments the stack pointer by 1 and copies the operand into the stack at the location pointed to by the stack pointer.