

Each question worth 1 points.

All questions assume a well-written assembly program.

1. What is the advantage of a programming language that supports a runtime stack?

- A. Programs will run faster than without it.
- B. Runtime memory allocation is possible.
- C..Nested procedure calls and recursion are possible.**
- D. Multiple programs can run at once.

the heap is for runtime memory allocation

2. What does this instruction do?

sw \$v0, 4(\$sp)

- A. Stores a value into a register.
- B. Stores a value into \$v0.
- C. Stores the value \$v0+4 onto the stack.
- D..Stores a value onto the stack.**

3. What does this instruction do?

addi \$sp, \$sp, -32

- A. Adds 32 to the stack pointer.
- B. Changes the stack pointer by 8 bytes.
- C..Changes the stack pointer by 32 bytes.**
- D. Stores the value -32 onto the stack.

4. What does this instruction do?

lw \$a0, 4(\$fp)

- A. Stores a value directly into register \$fp.
- B..Stores a value directly into register \$a0.**
- C. Stores four values into \$a0 starting at \$fp.
- D. Stores a value onto the stack.

5. After the following statement executes, what do you know to be true?

lw \$v0, 4(\$sp)

- A. The stack pointer will be incremented by 4.
- B. \$v0 will contain the value in \$sp, plus 4.
- C. \$sp will be incremented by 1.
- D..\$sp did not change.**

6. How do you compute the size of the current stack frame?

A..\$fp - \$sp + 4

B. \$fp + \$sp - 4

C. \$sp - \$fp - 4

D. \$sp - \$fp + 4

7. What does this instruction do?

jr \$ra

A. Jumps to a label named \$ra.

B. Calls a function or procedure.

C..Jumps to the address stored in a register.

D. Returns to the statement that branched here.

8. Your program calls a procedure. When the procedure begins, it constructs a stack frame because it will be calling a procedure itself. What two registers should the procedure always save on the stack?

A. the stack pointer and the first argument

B..the frame pointer and the return address

C. the stack pointer and the return address

D. the program counter and the frame pointer

9. You are writing a MIPS program that calls a procedure that begins at label **print_value**. The procedure expects one argument. Please write a few statements that will call the procedure while passing the value 125 as an argument.

li \$a0, 125

jal print_value

or

li \$t0, 125

move \$a0, \$t0

jal print_value

10. What is the purpose of caller-saved registers?

A..to protect values that the callee might change.

B. to pass values from the caller to the callee.

C. to save values the callee will need.

D. to calculate space needed by the callee.

11. When a problem is solved by solving smaller instances of the same problem, it is called...

- A. regression
- B. recursion**
- C. iteration
- D. looping