

## CS323 Compilers 2024F Quiz #4

1. Your student ID: \*

2. Which one of the following representations of three-address instructions is not suitable for optimizing compilers that may swap instructions? \*

- ☐ Quadruples
- ☒ Triples
- ☐ Indirect triples

3. For a strongly-typed language, what would the compiler do when processing the following code?

```
double a;
```

```
int b = a; *
```

- ☒ Report a type error.
- ☐ Explicitly convert the double value to an int value.

4. When a C program runs, which of the following areas of run-time memory stores the blocks allocated by the malloc() function? \*

- ☐ Code
- ☐ Stack
- ☐ Static
- ☒ Heap
- ☐ None of the above

5. Which one of the following statements is incorrect about flow graphs? \*

- ☐ Flow graphs depict how control transfers among basic blocks
- ☐ A basic block in a flow graph may have multiple predecessor blocks but can only have one successor block
- ☐ The loop entry node in a flow graph dominates the other loop nodes
- ☐ Flow graphs facilitate code optimizations

6. In the DAG (directed acyclic graph) of a basic block, each variable can only have one node. Is the statement correct? \*

- ☐ Yes
- ☐ No

7. When generating code, what is the role of an address descriptor? \*

- ☐ For each program variable, address descriptor helps track the locations where the current value of that variable can be found
- ☐ For each register, address descriptor helps track the variable names (an abstraction of memory addresses) whose current value is in that register
- ☐ Address descriptor helps record the information of symbols in a program
- ☐ Address descriptor helps map variable names to physical memory addresses