

Login name _____

Quiz 4

Name _____

CSE 131B

Signature _____

Spring 2007

Student ID _____

1. State which calling convention / parameter passing mode is being used and what gets printed:

Oberon

```
VAR x, y, z : INTEGER;
```

```
FUNCTION fool ( a : INTEGER; REF b : INTEGER ) : INTEGER;
```

```
BEGIN
```

```
  a := 14;
```

Parameter passing mode for **a** _____

```
  b := 5;
```

```
  RETURN y;
```

Parameter passing mode for **b** _____

```
END fool;
```

```
BEGIN
```

```
  x := 46; y := 21;
```

```
  z := fool( x, y );
```

Output:

```
  COUT << "x = " << x << NL;
```

x = _____

```
  COUT << "y = " << y << NL;
```

y = _____

```
  COUT << "z = " << z << NL;
```

z = _____

```
  RETURN 0;
```

```
END.
```

Fill in the blanks of the equivalent C program to simulate the above Oberon parameter passing modes (that exposes what the compiler is actually doing to implement these parameter passing modes):

```
int x, y, z;
```

```
int fool( _____ a, _____ b ) {
```

```
  _____ = 14;
```

```
  _____ = 5;
```

```
  return _____;
```

```
}
```

```
int main( void ) {
```

```
  x = 46; y = 21;
```

```
  z = fool( _____ , _____ );
```

```
  printf( "x = %d\n", x );
```

```
  printf( "y = %d\n", y );
```

```
  printf( "z = %d\n", z );
```

```
  return 0;
```

```
}
```

What is arguably the biggest disadvantage of macros as an open subroutine compared to closed and leaf subroutines (meaning this disadvantage is not present in closed and leaf subroutines)?

Pick of one the following letters to answer the questions below.

- A) Prologue
- B) Pre-Call
- C) Epilogue
- D) Post-Return

- | | |
|--|---|
| _____ Performs initialization of local variables | _____ Where local variable space is deallocated |
| _____ Where parameter space is deallocated | _____ Retrieves saved return address |
| _____ Where local variable space is allocated | _____ Where parameter space is allocated |
| _____ Store return value in %i0 in SPARC subroutine | _____ Saves the return address |
| _____ Restores caller-save registers | _____ Saves callee-save registers |
| _____ Retrieve return value from %o0 in SPARC subroutine | |

Project II – Phase I.1:

What would a bare bones `oberon.s` file look like after compiling the following Oberon program:

```
VAR y : INTEGER;  
  
BEGIN  
  y := 45;  
  
  COUT << y;  
  
  RETURN 0;  
END.
```