

Name: \_\_\_\_\_

## CS 421 — Variable Activity

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### Problems

#### Problem 1)

Consider the following code:

```
i = 10
f a = do
  a := 50
  a := a + i
  i
do print f(i)
  print i
```

What will be printed to the screen for the following parameter passing styles?

- Call By Value
- Call By Reference
- Call By (Copy-)Result

#### Problem 2)

Consider the following code:

```
foo x y = x + x + x

main = foo (bar 10) (baz 20)
```

Assuming that bar and baz are not recursive, how many times do they get called for each of the following parameter passing styles?

- Call By Value
- Call By Name
- Call By Need

### Problem 3)

What does this code do?

```
int foo() {
    int i;
    int a[10];
    int b[10];

    for(i=0; i<=10; i++) {
        b[i] = 10 + i;
        a[i] = 0;
    }
    return b[0];
}

int main() {
    printf ("Foo returned: %d\n",foo());
}
```

### Problem 4)

Here is some code for an evaluator. What parameter passing style does it implement?

```
eval (SExp (x:xs)) env =
    let fun = eval x env
        args = [eval y env | y <- xs]
    in case fun of
        Closure params body cloenv -> eval body ((zip params args) ++ cloenv)
```

What should we change if we want it to use call-by-name instead?