

Login name _____

Quiz 3

Name _____

CSE 131B

Signature _____

Winter 2006

Student ID _____

1. Given the following C definitions explain why the following are illegal expressions.

```
int array[5] = { 1, 2, 3, 4, 5 };
int *ptr = array;

(array++)[0] = 6;
```

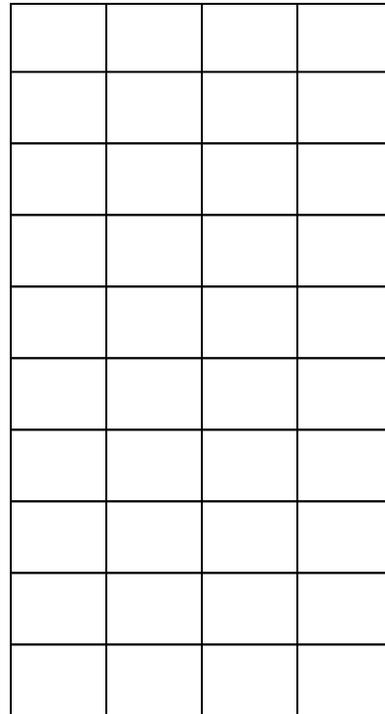
```
**(&(&ptr[1]+2)) = 40;
```

2. Show the memory layout of the following C struct/record definition taking into consideration the **SPARC** data type memory alignment restrictions discussed in class. Fill bytes in memory with the appropriate struct/record member/field name. For example, if member/field name *p* takes 4 bytes, you will have 4 *p*'s in the appropriate memory locations. If the member/field is an array, use the name followed by the index number. For example, some number of *p0s*, *p1s*, *p2s*, etc. Place an X in any bytes of padding. Structs and unions are padded so the total size is evenly divisible by the most strict alignment requirement of its members.

```
struct foo {
    char    a;
    short  b;
    double c;
    char    d[5];
    float  e;
};
```

```
struct foo fubar;
```

fubar:



low memory

high memory

What is the `offsetof(struct foo, d[2])`? _____

What is the `sizeof(struct foo)`? _____

If `struct foo` had been defined as `union foo` instead, what would be the `sizeof(union foo)`? _____

3. For static semantic analysis in particular (your Project I), arguably the two most important members of a symbol table entry are:

a)

b)

4. For the following Oberon statements, indicate the correct error message using the list of given error messages below (if there is no error, select option A):

Possible Error Messages:

A - No error

B - Incompatible type to binary operator

C - Incompatible type to unary operator

D - Is not assignable (not a modifiable L-value)

E - BOOLEAN required for conditional test

F - Argument not assignable to value parameter

G - Argument not equivalent to VAR parameter

H - Non-addressable argument passed to VAR parameter

```
CONST t = TRUE;
TYPE foo = INTEGER;
TYPE bar = REAL;
TYPE baz = BOOLEAN;
VAR x : foo;
VAR y : bar;
VAR z : baz;
PROCEDURE p(a : REAL; VAR b : REAL);
  (* do nothing *)
END p;
```

```
BEGIN
  z := ~x;           _____
  y := 99;           _____
  p(x DIV 1, y);    _____
  p(x, x);          _____
END.
```

What question would you most like to see on the Midterm?