

Homework assignments are to be completed individually. Hand-written submissions are fine, but they must be readable. Due at the beginning of class. Total points: 100, 5% of course grade

1. [15 Points] Exercise 11.7.1 in the book.
2. [15 Points] Exercise 11.7.2 in the book.
3. [15 Points] Exercise 11.7.3 in the book.
4. [15 Points] Exercise 12.1.1 in the book.
5. [20 Points] Exercise 12.1.2 in the book.

6. [20 points] Alias Analysis

FSCS

FICS

```
int g;

main() {
    int **a, **b, *c, *d, e, f, *r, *s;

S1    c = &e;

S2    d = &f;

S3    a = &c;

S4    b = &d;

S5    r = bar( a );

S6    s = bar( &d );

    }

int* bar(int **z) {
    int *q;

S7    q = *z;

S8    q = &g;

S9    return q;
    }
```

For the above program, perform flow-sensitive, context-sensitive alias analysis (FSCS) and flow-insensitive, context-sensitive alias analysis (FICS). Showing your work will help in the assignment of partial credit.

- (a) For FSCS, what is the points-to set for variables `r` and `s` after statement `S6`?
- (b) For FICS, what is the points-to set for variables `r` and `s` in the `main` function?