

Midterm Review

PROBLEM SOLVING IN C
(CSCE 105, SUMMER 2006)

URL: <http://www.cse.unl.edu/~cstrope/csce105su06/>

27th July, 2006

26th July, 2006

Know:

1. Software development method
2. General form of a C program
3. Uses of reserved words, standard identifiers, and user-defined identifiers
4. Types of variables, how to declare and assign each one
5. `printf` and `scanf` functions, how to use each part of the functions, use of placeholders (`%{d,f,c,l}`).
6. Use of arithmetic operators (`*`, `/`, `%`, `+`, `-`)
7. Know the four types of errors (ch. 2 sec. 8), what they are and what causes them.
8. Conditional statement evaluation, conditional operators, and short-circuit evaluation.
9. Conditional and arithmetic operator precedence
10. Forms of the `if` statements (`if`, `if-else`, nested `if`, multiple alternative decisions)
11. `switch` statements
12. Basic math functions (Table 3.1)
13. Function prototypes, definitions, calls, and the difference between them.
14. Writing simple functions
15. `for`, `while`, `do-while` loops
 - Format of loops
 - Uses
 - Steps of defining loops (Initialization, Testing, Update Steps)
 - Be able to write basic loops

Sample problems:

- **Problems in book, sample Midterm, quizzes**
- Write a function that solves the quadratic equation:

$$x_1 = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

- What is the difference between these two statements?

```
(i)  if(x > max) max = x;
      if(x < min) min = x;
```

```
(ii) if(x > max)
      max = x;
      else
      min = x;
```

- What is printed in the below for loops?

```
for(i = 1; i <= 5; printf("%d\n", i))
    i++;
```

```
for(i = 1; i <= 5; i++) {
    printf("%d\n", i);
    i += 2;
}
```

```
for(i = 1; i <= 5; i++) ;
    printf("%d\n", i);
printf("%d\n", i);
```

- Find the error(s), if any, in each of these statements:

- for day=1,3,1
- for(day=1,day<3,day++)
- for(day=10;day<=20;day++);
- for(day=10;day<5;day++)
- for(day=100;day<100,day--)
- for(day=10;day>100;day++)
- for(i=20;i>10;i++) i=i*3;

- Change this while loop into an equivalent for loop:

```
while(5 > a) { printf("a=%d\n",a); a+=2; }
```