

Homework 2: Midterm 1 Preparation

Due: Monday, January 24, in-class

Problem 1. Identifiers

In the list below, circle all C identifiers (i.e., valid variable names). (note, some variable names are *valid*, but prohibited by our style guide. They should be circled.)

b_o_o	stop.it	"none"	12Months	_X_
Flash_Drive	n00b	INWARDS	HOW_MUCH?	if20
true	if	iff	good!	float
me@gmail	don't_like_it	my1,000	__Robots	stone-cold

Problem 2. Constants

For each constant below, specify its type. If the constant is invalid, say "invalid".

(a) -57	_____	(b) 929,567	_____	(c) -2.001	_____
(d) 'c'	_____	(e) 800e-3	_____	(f) 4.2.2	_____
(g) 0	_____	(h) 'Alex'	_____	(i) true	_____
(j) 23,01.14	_____	(k) 5.2e12	_____	(l) '\n'	_____
(m) 3.4z3	_____	(n) "a"	_____	(c) 4.2e2.4	_____

Problem 3. Expressions

Rewrite each C expression using parentheses to show the order of operations.
(e.g. $a+b-c$ is $(a+b)-c$.)

(a) $7 + x + 4 / y$ -----

(b) $a + - 13 - - x * 2$ -----

(c) $c * f - 2 == 3 + 2$ -----

(d) $a == 4 \&\& b == 3 * -34$ -----

(e) $a + b - - c == -c - -b$ -----

Problem 4. Assignment

Consider the following code fragment:

```
int x, y, z;
...
x = x + z;
y = x + y;
z = z + y;
```

For each set of variable assignments below, specify the values of x , y and z after the code fragment executes.

(a) Initial: $x: 5$ $y: 6$ $z: 7$

Final: $x: ___$ $y: ___$ $z: ___$

(b) Initial: $x: 0$ $y: 100$ $z: -50$

Final: $x: ___$ $y: ___$ $z: ___$

(c) Initial: $x: 16$ $y: 32$ $z: 64$

Final: $x: ___$ $y: ___$ $z: ___$

Problem 7. Code writing.

Write a program that declares two integer variables, reads the value of each of them from the keyboard and outputs the average of the two.

```
#include <stdio.h>
```

```
int main() {
```

```
    return 0;  
}
```

Problem 8. More code writing.

Write a program that declares an integer variable, reads its value from the keyboard, computes its cube and outputs it to screen.

```
#include <stdio.h>
```

```
int main() {
```

```
    return 0;  
}
```

Problem 9. Debugging.

Three students wrote three different programs below to compute the product of two numbers entered from the keyboard. None of the three programs work as desired. Briefly explain why for each program.

Program 1 #include <stdio.h>

```
int main() {  
  
    int y;  
  
    scanf("%d", &x);  
    scanf("%d", &y);  
  
    y = y * x;  
    printf("%d\n", y);  
  
    return 0;  
}
```

Program 2 #include <stdio.h>

```
int main() {  
  
    int x,y;  
  
    scanf("%d", &x);  
    scanf("%d", &y);  
  
    x = y * x;  
    printf("%d\n", y);  
  
    return 0;  
}
```

Program 3 #include <stdio.h>

```
int main() {  
  
    int x,y;  
  
    scanf("%d", &x);  
    y = y * x;  
    scanf("%d", &y);  
  
    printf("%d\n", x);  
  
    return 0;  
}
```