EECS 10: Computational Methods in Electrical and Computer Engineering Quiz on Lectures 9-18

Rainer Dömer

doemer@uci.edu

The Henry Samueli School of Engineering Electrical Engineering and Computer Science University of California, Irvine

Midterm 1 Review Quiz

- Top 5 most "difficult" questions:
 - Rank 5: Question 27 (35.3% incorrect answers)
- Prime number test: Iterate over 2 ≤ i < x to find a divisor of x. What should go into box in line 4? (1 pt.)
 - a) i = 0;
 - b) i = 1;
 - c) i = 2;
 - d) i = x;
 - e) x = 0;

```
int x, i;
printf("Please input a number: ");
scanf("%d", &x);
initialize variable i
while(i < x)
{ if(x % i == 0)
    { printf("%d is not prime\n", x);
        break;
    }
    i++;
}
if( none of the i is a divisor of x )
    { printf("%d is prime\n", x);
}</pre>
```

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- Top 5 most "difficult" questions:
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- Prime number test: Iterate over $2 \le i < x$ to find a divisor of x. What should go into box in line 4? (1 pt.)
 - a) i = 0;
 - i = 1;
 - i = 2;
 - i = x;
 - e) x = 0;

```
int x, i;
printf("Please input a number: ");
scanf("%d", &x);
initialize variable i
while(i < x)
\{ if(x % i == 0) \}
  { printf("%d is not prime\n", x);
    break;
  i++;
if ( none of the i is a divisor of x )
  { printf("%d is prime\n", x);
```

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Midterm 1 Review Quiz

- Top 5 most "difficult" questions:
 - Rank 4: Question 25 (50.9% incorrect answers)
- Which of the following program fragments will not terminate? (Check all that apply! 2 pts.)

```
int a = 1;
while(a < 1000000)
   { a++; }
```

- int a = 0; while(a < 1000)
- int a = 1; c) while(a == 1){ a = a % 10; }

{ a = a * 3; }

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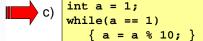
```
int a = 10;
d)
   while(a > 0)
       \{a = a / 3; \}
```

int a = 1; while(a < 1000)a = a << 1; }

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- Top 5 most "difficult" questions:
 - Rank 4: Question 25 (50.9% incorrect answers)
- Which of the following program fragments will not terminate? (Check all that apply! 2 pts.)
 - a) int a = 1; while(a < 1000000) { a++; }
- d) int a = 10;
 while(a > 0)
 { a = a / 3; }

- b)
- int a = 0; while(a < 1000) { a = a * 3; }
- e) int a = 1; while(a < 1000) { a = a << 1; }



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Midterm 1 Review Quiz

- Top 5 most "difficult" questions:
 - Rank 3: Question 12 (63.1% incorrect answers)
- Which of the following C expressions yield the same result?

(Check all that apply! 2 pts.)

- a) 4 << 8 % 5 / 2
- b) (4 << 8) % 5 / 2
- c) 4 << 8 % (5 / 2)
- d) (4 << 8 % 5) / 2
- e) 4 << (8 % 5) / 2

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- Top 5 most "difficult" questions:
 - Rank 3: Question 12 (63.1% incorrect answers)
- Which of the following C expressions yield the same result?

(Check all that apply! 2 pts.)

- a) 4 << 8 % 5 / 2 (8)
 - b) (4 << 8) % 5 / 2 (2)
 - c) $4 \ll 8 \% (5 / 2)$ (4)
 - d) (4 << 8 % 5) / 2 (16)
- e) 4 << (8 % 5) / 2 (8)

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Midterm 1 Review Quiz

- Top 5 most "difficult" questions:
 - Rank 2: Question 13 (64.3% incorrect answers)
- What is the output of the following C program fragment (1 pt.)

```
int i1 = 5, i2 = 2, i;
float f1 = 5, f2 = 2, f;
i = i1 / i2;
f = (int)(f1 / f2);
printf("i = %d, f = %f", i, f);
```

- a) i = 2, f = 2
- b) i = 1, f = 2
- c) i = 2, f = 2.00000
- d) i = 2.00000, f = 2.50000
- e) i = 2, f = 2.50000

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- Top 5 most "difficult" questions:
 - Rank 2: Question 13 (64.3% incorrect answers)
- What is the output of the following C program

```
fragment (1 pt.)
                         int i1 = 5, i2 = 2, i;
                         float f1 = 5, f2 = 2, f;
                         i = i1 / i2;
                         f = (int)(f1 / f2);
                         printf("i = %d, f = %f", i, f);
   a) i = 2, f = 2
   b) i = 1, f = 2
   c) i = 2, f = 2.00000
   d) i = 2.00000, f = 2.50000
   e) i = 2, f = 2.50000
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```

Midterm 1 Review Quiz

- Top 5 most "difficult" questions:
 - Rank 1: Question 30 (75.1% incorrect answers) int x, i;
- Prime number test: Iterate over $2 \le i < x$ to find a divisor of x. What should go into box in line 12? (1 pt.)

```
a) x / i == 0
```

- b) x < i
- i / x == 0
- i + 1 == x
- i == x

```
printf("Please input a number: ");
scanf("%d", &x);
initialize variable i
while(i < x)
\{ if(x % i == 0) \}
  { printf("%d is not prime\n", x);
    break;
if( none of the i is a divisor of x )
    printf("%d is prime\n", x);
```

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 - Rank 1: Question 30 (75.1% incorrect answers)
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 box in line 12? (1 pt.)

 int x, i; printf("Please scanf("%d", &x) initialize variable initialize variabl

```
oox in line 12? (1 p
```

- b) x < i
- c) i / x == 0d) i + 1 == x
- u) 1 + 1 ==
- e) i == x

```
int x, i;
printf("Please input a number: ");
scanf("%d", &x);
initialize variable i
while(i < x)
{ if(x % i == 0)
    { printf("%d is not prime\n", x);
        break;
    }
    i++;
}
if( none of the i is a divisor of x )
    { printf("%d is prime\n", x);
}</pre>
```

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Quiz: Question 1

 Which of the following expressions would be treated as a true condition when used with an if statement?

(Check all that apply!)

```
a) (int)5.99 > 5
```

- b) 1 || 0 && 1
- c) 5 >= 5
- d) (1 + 2 + 3) == (3 << 2 >> 1)
- e) 5 5

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 Which of the following expressions would be treated as a true condition when used with an if statement?

(Check all that apply!)

```
a) (int)5.99 > 5
b) 1 || 0 && 1
```

c) 5 >= 5

e) 5 - 5

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Quiz: Question 2

 If cnt is an integer counter that counts upwards in steps of 1, how could one update the value of cnt? (Check all that apply!)

```
a) cnt += 1;
```

b)
$$cnt = cnt + 1;$$

- c) ++cnt;
- d) cnt++;
- e) cnt += cnt;

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 If cnt is an integer counter that counts upwards in steps of 1, how could one update the value of cnt? (Check all that apply!)

```
a) cnt += 1;
b) cnt = cnt + 1;
c) ++cnt;
d) cnt++;
e) cnt += cnt;
```

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Quiz: Question 3

 What is the value of x after the following code fragment is executed?

```
int x = 0;
for(x = 1; x <= 10; x++)
{ }</pre>
```

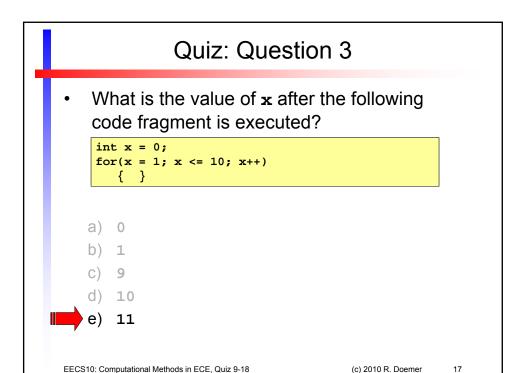
- a) 0
- b) 1
- c) 9
- d) 10
- e) 11

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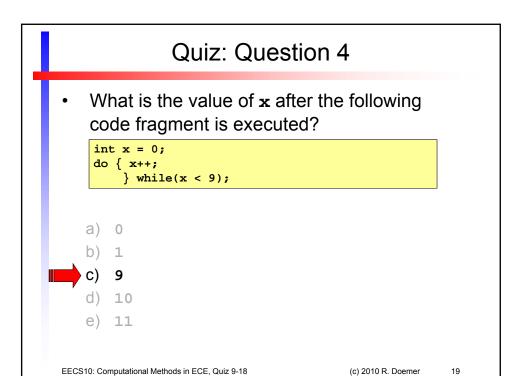
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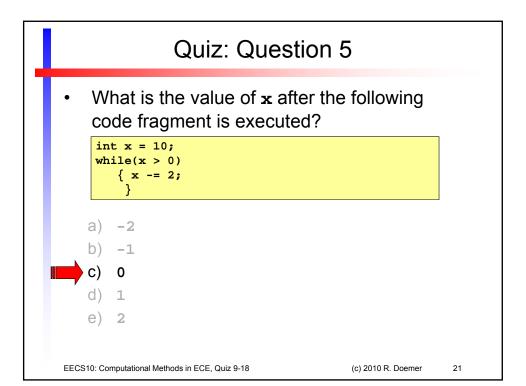
8



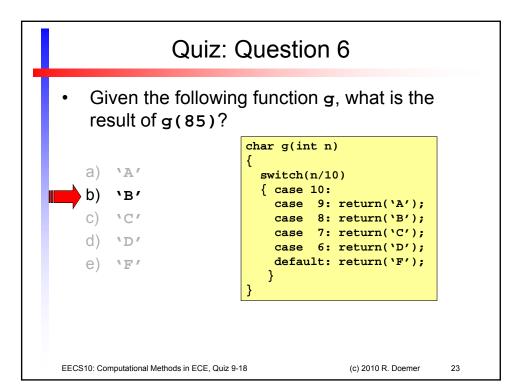
Quiz: Question 4 What is the value of x after the following code fragment is executed? int x = 0; do { x++; } while(x < 9); a) 0 b) 1 c) 9 d) 10 e) 11 EECS10: Computational Methods in ECE, Quiz 9-18 (c) 2010 R. Doemer 18



Quiz: Question 5 What is the value of x after the following code fragment is executed? int x = 10; while(x > 0) { x -= 2; } a) -2 b) -1 c) 0 d) 1 e) 2 EECS10: Computational Methods in ECE, Quiz 9-18 (c) 2010 R. Doemer



Quiz: Question 6 Given the following function g, what is the result of g(85)? char g(int n) **`A'** a) switch(n/10) { case 10: **'B'** case 9: return('A'); 'C' case 8: return('B'); case 7: return('C'); 'D' case 6: return('D'); default: return('F'); `F' EECS10: Computational Methods in ECE, Quiz 9-18 (c) 2010 R. Doemer



What is output by the following C statement?

printf("x = %03d", 3 + 4);

- a) x = 034
- b) x = 037
- C) $\mathbf{x} = 007$
- d) x = 7
- e) x = 347

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Quiz: Question 8

- In the gdb debugger, what does next do?
 - a) It moves to the next argument of the function.
 - b) It calls the next function in the program.
 - c) It executes the next statement in the program.
 - d) It prints the value of the next variable.
 - e) It loads the next program into the debugger.

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- In the gdb debugger, what does next do?
 - a) It moves to the next argument of the function.
 - b) It calls the next function in the program.
 - c) It executes the next statement in the program.
 - d) It prints the value of the next variable.
 - e) It loads the next program into the debugger.

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Quiz: Question 9

 Given the following code fragment, which of the following statements are true?

(Check all that apply!)

- a) Function f is declared.
- b) Function g calls function £
- c) Variable **z** is a local variable of function **g**
- double f(int x);
 void g(int x, int y)
 {
 int z;

 z = f(x) + 2*y;
 return z;
 }
- d) Function g is declared and defined.
- e) y is a parameter of function g.

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 Given the following code fragment, which of the following statements are true?

(Check all that apply!)

- a) Function **f** is declared.
 - b) Function g calls function £
- c) Variable z is a local variable of function g
- d) Function g is declared and defined.
- e) y is a parameter of function g.

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double f(int x);
void g(int x, int y)

z = f(x) + 2*y;return z;

int z;

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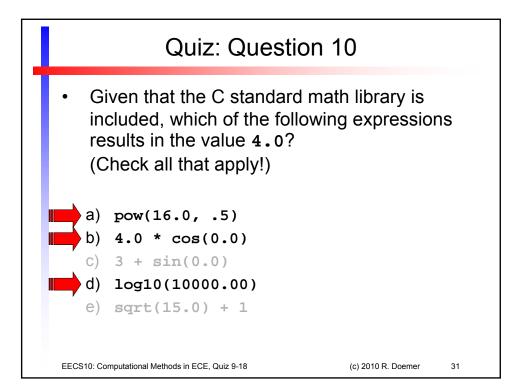
Quiz: Question 10

- Given that the C standard math library is included, which of the following expressions results in the value 4.0? (Check all that apply!)
 - a) pow(16.0, .5)
 - b) 4.0 * cos(0.0)
 - c) $3 + \sin(0.0)$
 - d) log10(10000.00)
 - e) sqrt(15.0) + 1

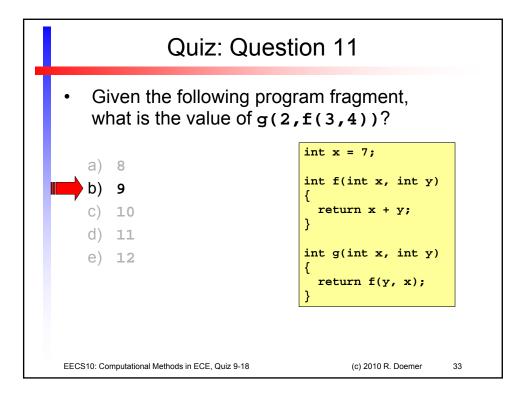
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Quiz: Question 11 Given the following program fragment, what is the value of g(2,f(3,4))? int x = 7; a) 8 int f(int x, int y) b) 9 c) 10 return x + y; d) 11 int g(int x, int y) e) 12 return f(y, x); EECS10: Computational Methods in ECE, Quiz 9-18 (c) 2010 R. Doemer



s[4] = 0;

char s[] = "EECS10";

printf("%s %c", s, s[2]);

What is output by the following program fragment?

```
a) EECS00 1
```

- b) EEC 10 0
- C) E E
- d) EECS C
- e) EEC C

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What is output by the following program fragment?

```
char s[] = "EECS10";

a) EECS00 1

b) EEC 10 0

char s[] = "EECS10";

s[4] = 0;
printf("%s %c", s, s[2]);
```

🛑 d) EECS C

e) **EEC** C

EE

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Quiz: Question 13

Given the definition double p=0.0125;
 which of the following C statements will print out p = 1.25%?
 (Check all that apply!)

```
a) printf("p = %d.25%%", (int)(p*100.0));
```

- b) printf("p = %p", 100.0*p);
- c) printf("p = %.2f%%", p*100.0);
- d) printf("p = %.2f%c", p*100.0, '%');
- e) printf("p = ", 100.0 * p, "%%");

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- Given the definition double p=0.0125;
 which of the following C statements will print out p = 1.25%?
 (Check all that apply!)
- a) printf("p = %d.25%%", (int)(p*100.0));
 - b) printf("p = %p", 100.0*p);
- C) printf("p = %.2f%%", p*100.0);
 - d) printf("p = %.2f%c", p*100.0, '%');
 - e) printf("p = ", 100.0 * p, "%%");

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Quiz: Question 14

- Which of the following statements is true for an algorithm? (Check all that apply!)
 - a) An algorithm must be indeterministic.
 - b) An algorithm solves a problem quickly.
 - c) An algorithm is historically based on Al Gore's rythm.
 - d) An algorithm executes a program using pseudo code.
 - e) An algorithm must terminate after a finite number of steps.

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- Which of the following statements is true for an algorithm? (Check all that apply!)
 - a) An algorithm must be indeterministic.
 - b) An algorithm solves a problem quickly.
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 - d) An algorithm executes a program using pseudo
- - e) An algorithm must terminate after a finite number of steps.

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Quiz: Question 15

Which of the following declarations can be added to the program in line 8 without creating a compilation error?

(Check all that apply!)

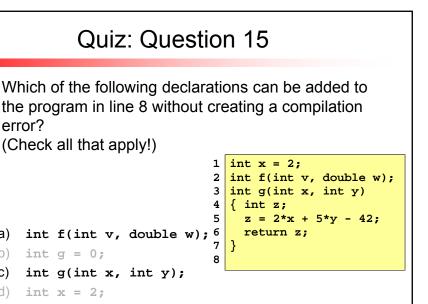
```
1 int x = 2;
                             2 int f(int v, double w);
                             3 int g(int x, int y)
                             4 { int z;
                                 z = 2*x + 5*y - 42;
a) int f(int v, double w); 6
                                 return z;
   int g = 0;
                             8
   int g(int x, int y);
```

int x = 2;

int f(double v, double w);

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Quiz: Question 16

- The following function issorted is supposed to return true if and only if the given array L is sorted in increasing order.
- What should go into Box1 in line 3?

int f(double v, double w);

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```
a) i=1; i<10; i++
   b) i=0; i<10; i++
                              1 int issorted(int L[10])
                              2 { int i;
   C) i=0; i<9; i++
                              3
                                   for( Box1 )
                                   { if(L[i] >= L[i+1])
   d) i=10; i>0; i--
                              5
                                     { Box2; }
   e) i=9; i>=0; i--
                              6
                              7
                                   Box3;
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```

- The following function issorted is supposed to return true if and only if the given array L is sorted in increasing order.
- What should go into Box1 in line 3?

```
a) i=1; i<10; i++
                              1 int issorted(int L[10])
   b) i=0; i<10; i++
                             2 { int i;
                            3
      i=0; i<9; i++
                                  for( Box1 )
                                  { if(L[i] >= L[i+1])
       i=10; i>0; i--
                                    { Box2; }
                            5
                             6
       i=9; i>=0; i--
                                  Box3;
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```

Quiz: Question 17

- The following function issorted is supposed to return true if and only if the given array L is sorted in increasing order.
- What should go into Box2 in line 5?

- The following function issorted is supposed to return true if and only if the given array L is sorted in increasing order.
- What should go into Box2 in line 5?
- 📥 a) return 0
 - b) return 1
 - c) continue
 - d) break
 - e) return

```
int issorted(int L[10])
{ int i;
  for( Box1 )
  { if(L[i] >= L[i+1])
      { Box2; }
  }
  Box3;
}
```

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Quiz: Question 18

- The following function issorted is supposed to return true if and only if the given array L is sorted in increasing order.
- What should go into Box3 in line 7?

```
a) return 0
```

- b) return 1
- c) continue
- d) break
- e) return

```
1 int issorted(int L[10])
2 { int i;
3   for( Box1 )
4   { if(L[i] >= L[i+1])
5   { Box2; }
6  }
7  Box3;
8
```

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- The following function issorted is supposed to return true if and only if the given array L is sorted in increasing order.
- What should go into Box3 in line 7?
- a) return 0
 - b) return 1
 - c) continue
 - d) break
 - e) return

```
int issorted(int L[10])
{ int i;
  for( Box1 )
  { if(L[i] >= L[i+1])
      { Box2; }
  }
  Box3;
}
```

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Quiz: Question 19

Consider the following program fragment:

```
unsigned int x=0, y=0;
scanf("%d", &x);
while((x>>=1) != 0)
    {y += 1;}
printf("%d", y);
```

- When running the program, which of the following is correct? (Check all that apply!)
 - a) If the user enters 6, it will print 2.
 - b) If the user enters 6, it will print 3.
 - c) If the user enters 4, it will print 2.
 - d) If the user enters 4, it will print 1.
 - e) If the user enters 4, it will print 4.

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Consider the following program fragment:

- When running the program, which of the following is correct? (Check all that apply!)
- a) If the user enters 6, it will print 2.
 - b) If the user enters 6, it will print 3.
 - c) If the user enters 4, it will print 2.
 - d) If the user enters 4, it will print 1.
 - e) If the user enters 4, it will print 4.

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Quiz: Question 20

· Consider the following program fragment:

- Which of the following statements are true about the program? (Check all that apply!)
 - a) y will be the integer part of $log_2(x)$
 - b) y will be equal to x
 - c) It computes the product of $\mathbf x$ and $\mathbf y$
 - d) It sets y to the sum of x and y
 - e) The condition in line 3 is equivalent to (x/=2)!=0

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Consider the following program fragment:

```
unsigned int x=0, y=0;
scanf("%d", &x);
while((x>>=1) != 0)
    {y += 1;}
printf("%d", y);
```

- Which of the following statements are true about the program? (Check all that apply!)
 - (a) \mathbf{y} will be the integer part of $\log_2(x)$
 - b) y will be equal to x
 - c) It computes the product of x and y
 - d) It sets y to the sum of x and y
- e) The condition in line 3 is equivalent to (x/=2)!=0

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Quiz: Question 21

- Which of the following expressions yield a result type of double? (Check all that apply!)
 - a) 5 * 100000
 - b) 5 * 100.00
 - c) (int)5.3 > 3.0
 - d) 10 / 3
 - e) 5.0 / 5

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- Which of the following expressions yield a result type of double? (Check all that apply!)
 - a) 5 * 100000
- 📕 b) 5 * 100.00
 - c) (int)5.3 > 3.0
 - d) 10 / 3
- e) 5.0 / 5

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Quiz: Question 22

· What is output by the following C statement?

printf("%d + %d + %d", 1, 2, 1+2);

- a) 1 + 2 + 1 + 2
- b) %d + %d + %d, 1, 2, 1+2
- c) 6
- d) %1 + %2 + %3
- e) 1 + 2 + 3

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What is output by the following C statement?

```
printf("%d + %d + %d", 1, 2, 1+2);
```

- a) 1 + 2 + 1 + 2
- b) %d + %d + %d, 1, 2, 1+2
- c) 6
- d) %1 + %2 + %3
- 🛑 e) 1 + 2 + 3

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Quiz: Question 23

· What is output by the following C statement?

```
int x = 0, y = 5;
x = y++;
printf("x = %d, y = %d", x, y);
```

- a) x = 0, y = 5
- b) x = 5, y = 5
- c) x = 5, y = 6
- d) x = 6, y = 5
- e) x = 6, y = 6

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What is output by the following C statement?

```
int x = 0, y = 5;
x = y++;
printf("x = %d, y = %d", x, y);
a) x = 0, y = 5
b) x = 5, y = 5
```

 \mathbf{C}) $\mathbf{x} = 5$, $\mathbf{y} = 6$

d) x = 6, y = 5

e) x = 6, y = 6

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Quiz: Question 24

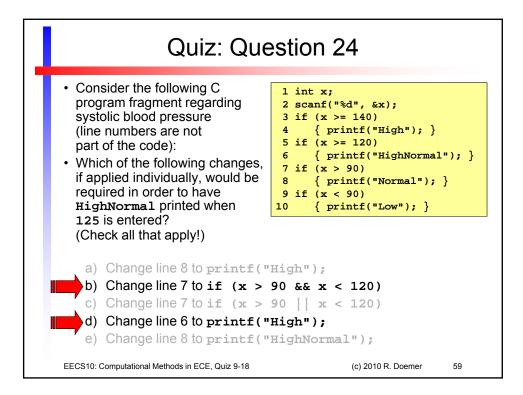
- Consider the following C program fragment regarding systolic blood pressure (line numbers are not part of the code):
- Which of the following changes, if applied individually, would be required in order to have HighNormal printed when 125 is entered?
 (Check all that apply!)

- a) Change line 8 to printf("High");
- b) Change line 7 to if (x > 90 && x < 120)
- c) Change line 7 to if $(x > 90 \mid | x < 120)$
- d) Change line 6 to printf("High");
- e) Change line 8 to printf("HighNormal");

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Quiz: Question 25 • What is the result of the following expression? !((4 - 5%4) < 5 && (7/6 > 4)) a) true b) false c) 1 d) 0 e) invalid expression EECS10: Computational Methods in ECE, Quiz 9-18 (c) 2010 R. Doemer 60

