

EECS 10: Computational Methods in Electrical and Computer Engineering

Quiz on Lectures 9-18

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Midterm 1 Review Quiz

- Top 5 most “difficult” questions:
 - Rank 5: Question 11 (54.4% incorrect answers)
- Which of the following expressions yield a result type of `double`?
(Check all that apply! 2 pts.)
 - a) `5 * 100000`
 - b) `5 * 100.00`
 - c) `(int)5.3 > 3.0`
 - d) `10 / 3`
 - e) `5.0 / 5`

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a) `5 * 100000`

b) `5 * 100.00`

c) `(int)5.3 > 3.0`

d) `10 / 3`

e) `5.0 / 5`

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Midterm 1 Review Quiz

- Top 5 most “difficult” questions:
 - Rank 4: Question 9 (60.0% incorrect answers)
- What is output by the following C statement? (1 pt.)

```
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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Midterm 1 Review Quiz

- Top 5 most “difficult” questions:
 - Rank 4: Question 9 (60.0% incorrect answers)
- What is output by the following C statement?
(1 pt.)

```
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

Midterm 1 Review Quiz

- Top 5 most “difficult” questions:
 - Rank 3: Question 15 (62.4% 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

Midterm 1 Review Quiz

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 - Rank 3: Question 15 (62.4% incorrect answers)
- What is the output of the following C program fragment (1 pt.)

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float f1 = 5, f2 = 2, f;
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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 2: Question 21 (72.0% incorrect answers)
- 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! 2 pts.)

```
1 int x;
2 scanf("%d", &x);
3 if (x >= 140)
4     { printf("High"); }
5 if (x >= 120)
6     { printf("HighNormal"); }
7 if (x > 90)
8     { printf("Normal"); }
9 if (x < 90)
10    { printf("Low"); }
```

- 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 || x < 120)`
- d) Change line 6 to `printf("High");`
- e) Change line 8 to `printf("HighNormal");`

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Midterm 1 Review Quiz

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6     { printf("HighNormal"); }
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8     { printf("Normal"); }
9 if (x < 90)
10    { printf("Low"); }
```

- 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! 2 pts.)

- 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 || x < 120)`
- d) Change line 6 to `printf("High");`
- e) Change line 8 to `printf("HighNormal");`

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Midterm 1 Review Quiz

- Top 5 most “difficult” questions:

– Rank 1: Question 12 (73.6% incorrect answers)

- What is the result of the following expression? (1 pt.)

```
!((4 - 5%4) < 5 && (7/6 > 4))
```

- a) `true`
- b) `false`
- c) `1`
- d) `0`
- e) `invalid expression`

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
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Midterm 1 Review Quiz

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- What is the result of the following expression?
(1 pt.)

```
!((4 - 5%4) < 5 && (7/6 > 4))
```

- a) true
- b) false
-  c) 1
- d) 0
- e) invalid expression

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`

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`

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;`

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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Quiz: Question 3

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

```
int x = 0;
for(x = 1; x <= 9; x++)
{ }
```

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

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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 <= 9; x++)
{ }
```

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

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

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

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

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

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Quiz: Question 6

- Given the following function g , what is the result of $g(88)$?

```
char g(int n)
{
    switch(n/10)
    { case 10:
      case 9: return('A');
      case 8: return('B');
      case 7: return('C');
      case 6: return('D');
      default: return('F');
    }
}
```

- a) 'A'
- b) 'B'
- c) 'C'
- d) 'D'
- e) 'F'


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Quiz: Question 6

- Given the following function `g`, what is the result of `g(88)`?

- a) `'A'`
-  b) `'B'`
- c) `'C'`
- d) `'D'`
- e) `'F'`

```
char g(int n)
{
    switch(n/10)
    { case 10:
      case 9: return('A');
      case 8: return('B');
      case 7: return('C');
      case 6: return('D');
      default: return('F');
    }
}
```

Quiz: Question 7

- What is output by the following C statement?


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

- a) `x = 034`
- b) `x = 037`
- c) `x = 007`
- d) `x = 7`
- e) `x = 347`

Quiz: Question 7

- What is output by the following C statement?

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


- a) x = 034
- b) x = 037
-  c) x = 007
- d) x = 7
- e) x = 347

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.

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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Quiz: Question 9

- Given the following code fragment, which of the following statements are true?
(Check all that apply!)

```
double f(int x);
void g(int x, int y)
{
    int z;

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

- a) Function `f` is declared.
- b) Function `g` calls function `f`
- 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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Quiz: Question 9

- Given the following code fragment, which of the following statements are true?
(Check all that apply!)

```
double f(int x);
void g(int x, int y)
{
    int z;

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

- a) Function `f` is declared.
- b) Function `g` calls function `f`
- 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`.

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`

Quiz: Question 10

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Quiz: Question 11

- Given the following program fragment, what is the value of `g(2, f(3, 4))`?

- a) 8
- b) 9
- c) 10
- d) 11
- e) 12

```
int x = 7;

int f(int x, int y)
{
    return x + y;
}

int g(int x, int y)
{
    return f(y, x);
}
```

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Quiz: Question 11

- Given the following program fragment, what is the value of $g(2, f(3, 4))$?

- a) 8
-  b) 9
- c) 10
- d) 11
- e) 12

```
int x = 7;

int f(int x, int y)
{
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{
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}
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Quiz: Question 12

- What is output by the following program fragment?


- a) **EECS00 1**
- b) **EEC 10 0**
- c) **E E**
- d) **EECS C**
- e) **EEC C**

```
char s[] = "EECS10";
s[4] = 0;
printf("%s %c", s, s[2]);
```

Quiz: Question 12

- What is output by the following program fragment?

```
char s[] = "EECS10";
s[4] = 0;
printf("%s %c", s, s[2]);
```

- a) EECS00 1
- b) EEC 10 0
- c) E E
-  d) EECS C
- e) EEC C

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, "%");`

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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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 rhythm.
- d) An algorithm executes a program using pseudo code.
- e) An algorithm must terminate after a finite number of steps.

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Quiz: Question 14

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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;
5   z = 2*x + 5*y - 42;
6   return z;
7 }
```

- a) `int f(int v, double w);`
- b) `int g = 0;`
- c) `int g(int x, int y);`
- d) `int x = 2;`
- e) `int f(double v, double w);`

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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?
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```

1 int x = 2;
2 int f(int v, double w);
3 int g(int x, int y)
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5   z = 2*x + 5*y - 42;
6   return z;
7 }

```

- a) `int f(int v, double w);`
- b) `int g = 0;`
- c) `int g(int x, int y);`
- d) `int x = 2;`
- e) `int f(double v, double w);`

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?

- a) `i=1; i<10; i++`
- b) `i=0; i<10; i++`
- c) `i=0; i<9; i++`
- d) `i=10; i>0; i--`
- e) `i=9; i>=0; i--`

```

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 }

```

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?

- a) `i=1; i<10; i++`
 b) `i=0; i<10; i++`
 c) `i=0; i<9; i++`
 d) `i=10; i>0; i--`
 e) `i=9; i>=0; i--`

```

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

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?

- 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 }
```

Quiz: Question 17

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- What should go into `Box2` in line 5?

- a) `return 0`
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- c) `continue`
- d) `break`
- e) `return`

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1 int issorted(int L[10])
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3   for( Box1 )
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5       { Box2; }
6     }
7   Box3;
8 }
```

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 }
```

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 }
```

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.

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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Quiz: Question 20

- 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) 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 20

- Consider the following program fragment:

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    {y += 1;}
printf("%d", y);
```

- Which of the following statements are true about the program? (Check all that apply!)

- a) y will be the integer part of $\log_2(x)$
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