EECS 10: Computational Methods in Electrical and Computer Engineering

Quiz on Lectures 9-17

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Midterm 1 Review Quiz

- Top 5 most “difficult” questions:
  - Rank 5: Question 6 (65.8% wrong answers)
- Which of the following statements is true about data types in ANSI-C?
  (Check all that apply! 2 pts.)

a) **`int`** has a larger range than **`char`**
b) **`char`** can store a smaller value than **`unsigned int`**
c) **`long`** has a smaller range than **`unsigned int`**
d) **`float`** has a higher precision than **`double`**
e) **`float`** can store a greater value than **`long int`**

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b) **`char`** can store a smaller value than **`unsigned int`**
c) **`long`** has a smaller range than **`unsigned int`**
d) **`float`** has a higher precision than **`double`**
e) **`float`** can store a greater value than **`long int`**

Midterm 1 Review Quiz

- Top 5 most "difficult" questions:
  - Rank 4: Question 5 (69.9% wrong answers)
- Which of the following constructs denotes a valid type name in C?
  (Check all that apply! 2 pts.)
  a) **`short char`**
  b) **`unsigned char`**
  c) **`unsigned long int`**
  d) **`short double`**
  e) **`signed float`**

Midterm 1 Review Quiz

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- Which of the following constructs denotes a valid type name in C?
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  a) `short char`
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  c) `unsigned long int`
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  e) `signed float`

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Midterm 1 Review Quiz

- Top 5 most "difficult" questions:
  - Rank 3: Question 13 (75.1% wrong answers)
- Which of the following C expressions yield the same result?
  (Check all that apply!)
  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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Midterm 1 Review Quiz

- Top 5 most "difficult" questions:
  - Rank 3: Question 13 (75.1% wrong answers)
- Which of the following C expressions yield the same result?
  (Check all that apply!)

a) `4 << 8 % 5 / 2` = 8
b) `(4 << 8) % 5 / 2` = 2
c) `4 << 8 % (5 / 2)` = 4
d) `(4 << 8 % 5) / 2` = 16
e) `4 << (8 % 5) / 2` = 8

Midterm 1 Review Quiz

- Top 5 most "difficult" questions:
  - Rank 2: Question 20 (79.8% wrong answers)

```
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`

Midterm 1 Review Quiz

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  - Rank 2: Question 20 (79.8% wrong answers)

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Midterm 1 Review Quiz

- Top 5 most "difficult" questions:
  - Rank 1: Question 21 (79.8% wrong answers)

```
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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Midterm 1 Review Quiz

- Top 5 most “difficult” questions:
  - Rank 1: Question 21 (79.8% wrong answers)

```
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 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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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;`**

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 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**

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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 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 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 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.

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**.

Quiz: Question 9

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```
double f(int x);
void g(int x, int y)
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  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**.

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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e) **`sqrt(15.0) + 1`**

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);
}
```

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);
}
```


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, "%%");`**

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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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);`

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!)

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1 int x = 2;
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```

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

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e) `i=9; i>=0; i--`

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6   }
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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;
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Quiz: Question 17

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c) **`continue`**
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1  int issorted(int L[10])
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5      { Box2; }
6    }
7    Box3;
8  }
```

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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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Quiz: Question 18

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b) **`return 1`**
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