

## EECS 10: Computational Methods in Electrical and Computer Engineering

### Quiz on Lectures 18-24

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## Midterm 2 Review Quiz


- Top 5 most “difficult” questions:
  - Rank 5: Question 6 (71.7% wrong answers)
- In the program below, what is the result of calling `grade(75)`?

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

```
1 char grade(int x)
2 { char g;
3   if (x > 90)
4     { g = 'A'; }
5   if (x > 80)
6     { g = 'B'; }
7   if (x > 70)
8     { g = 'C'; }
9   if (x > 60)
10    { g = 'D'; }
11  else
12    { g = 'F'; }
13  return g;
14 }
```

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## Midterm 2 Review Quiz

- Top 5 most “difficult” questions:
  - Follow-up Question 8 (13.1% wrong answers!)
- Let’s revise the program. If you replace each `if` in lines 5, 7 and 9 with `else if` (and adjust the indentation), what is the result then when calling `grade(75)`?

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

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- c) `'C'`
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## Midterm 2 Review Quiz

- Top 5 most “difficult” questions:
  - Rank 4: Question 14 (72.8% wrong answers)
- Given two global variables `int x=7` and `int y=8`, which of the following functions properly swaps the values such that `x=8` and `y=7`?  
(Check all that apply! 2 pts.)

a) `void swap(void)`  
`{ int t;`  
 `t = x; x = y; y = t; }`

b) `void swap(int x, int y)`  
`{ int t;`  
 `t = x; x = y; y = t; }`

c) `void swap(int x, int y)`  
`{ x = y; y = x;`  
`}`

d) `void swap(void)`  
`{ x = y; y = x;`  
`}`

e) `void swap(void)`  
`{ int t;`  
 `t = y; y = x; x = t; }`

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## Midterm 2 Review Quiz

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(Check all that apply! 2 pts.)

 a) 

```
void swap(void)
{ int t;
  t = x; x = y; y = t; }
```

b) 

```
void swap(int x, int y)
{ int t;
  t = x; x = y; y = t; }
```

c) 


```
void swap(int x, int y)
{ x = y; y = x; }
```

d) 

```
void swap(void)
{ x = y; y = x; }
```

e) 

```
void swap(void)
{ int t;
  t = y; y = x; x = t; }
```



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## Midterm 2 Review Quiz

- Top 5 most “difficult” questions:
  - Rank 3: Question 9 (75.9% wrong answers)
- Which of the following C program fragments is equivalent to the following loop? (Check all that apply! 2 pts.)

```
for(Box1; Box2; Box3)
{ Box4; }
```

a) 

```
Box1;
while(Box2)
{ Box4; Box3; }
```

b) 

```
Box1;
while(Box2)
{ Box3; Box4; }
```

c) 

```
Box2;
while(Box1)
{ Box4; Box3; }
```

d) 

```
while(Box1)
{ Box2; Box3; Box4; }
```

e) 

```
while(Box2)
{ Box1; Box4; Box3; }
```

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```
for(Box1; Box2; Box3)
{ Box4; }
```



a) 

```
Box1;
while(Box2)
{ Box4; Box3; }
```

b) 

```
Box1;
while(Box2)
{ Box3; Box4; }
```

c) 

```
Box2;
while(Box1)
{ Box4; Box3; }
```

d) 

```
while(Box1)
{ Box2; Box3; Box4; }
```

e) 

```
while(Box2)
{ Box1; Box4; Box3; }
```

## Midterm 2 Review Quiz

- Top 5 most “difficult” questions:
  - Rank 2: Question 16 (76.4% wrong answers)
- Which of the following are valid declarations of an integer array **A** of size 3? (Check all that apply! 2 pts.)

a) `int A[3] = {1,2,3};`

b) `int A[3] = {1,2};`

c) `int A[3];`

d) `int A[] = {1,2,3};`

e) `int A[3] = {};`

## Midterm 2 Review Quiz

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(Check all that apply! 2 pts.)

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- c) `int A[3];`
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## Midterm 2 Review Quiz

- Top 5 most “difficult” questions:
  - Rank 1: Question 4 (81.2% wrong answers)
- In the `gdb` debugger, which commands allow you to run your program step by step?  
(Check all that apply! 2 pts.)

- a) `step`
- b) `cont`
- c) `next`
- d) `run`
- e) `back`

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- e) `back`

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## Quiz: Question 1

- Which of the following are correct definitions of a string `s` that is initialized with the first three letters of the alphabet? (Check all that apply!)

- a) `char s[4] = {'A', 'B', 'C'};`
- b) `char s[4] = {"A", "B", "C"};`
- c) `char s[3] = {'A', 'B', 'C'};`
- d) `char s[] = "ABC";`
- e) `char s[] = 'ABC';`

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## Quiz: Question 1

- Which of the following are correct definitions of a string `s` that is initialized with the first three letters of the alphabet?  
(Check all that apply!)

- a) `char s[4] = {'A', 'B', 'C'};`
- b) `char s[4] = {"A", "B", "C"};`
- c) `char s[3] = {'A', 'B', 'C'};`
- d) `char s[] = "ABC";`
- e) `char s[] = 'ABC';`

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## Quiz: Question 2

- What is recursion?  
(Check all that apply!)
- a) A function that does not terminate.
- b) A function that calls itself.
- c) A function that contains a loop.
- d) A function `f` that calls a function `g` which calls `f`.
- e) A function that returns no value.

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## Quiz: Question 2

- What is recursion?  
(Check all that apply!)
  - a) A function that does not terminate.
  - b) A function that calls itself.
  - c) A function that contains a loop.
  - d) A function  $f$  that calls a function  $g$  which calls  $f$ .
  - e) A function that returns no value.

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## Quiz: Question 3

- Given the function definition below, what is printed for the function call  $f(3)$ ?

- a) 1 2 3
- b) 1 2 3 4
- c) 3 2 1 0
- d) 4 3 2 1
- e) 3 2 1

```
1 void f(int x)
2 {
3     printf("%d ", x);
4     if (x > 0)
5         { f(x-1); }
6 }
```


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### Quiz: Question 3

- Given the function definition below, what is printed for the function call  $f(3)$ ?

- a) 1 2 3  
 b) 1 2 3 4  
 c) 3 2 1 0  
 d) 4 3 2 1  
 e) 3 2 1

```

1 void f(int x)
2 {
3     printf("%d ", x);
4     if (x > 0)
5         { f(x-1); }
6 }
```

### Quiz: Question 4

- Given the following definition of the vectors  $v_1$ ,  $v_2$  and  $v_3$ , what is a correct way to perform a vector addition of  $v_1$  and  $v_2$ ?


```
struct v {int x, y;} v1, v2, v3;
```

- a)  $v_3 = v_1 + v_2;$   
 b)  $v_3 = v_1[x]*v_2[y] + v_1[y]*v_2[x]$   
 c)  $v_3[0] = v_1[0] + v_2[0];$   
 $v_3[1] = v_1[1] + v_2[1];$   
 d)  $v_3.x = v_1.x + v_2.x;$   
 $v_3.y = v_1.y + v_2.y;$   
 e)  $v_3->x = v_1->x + v_2->x;$   
 $v_3->y = v_1->y + v_2->y;$

### Quiz: Question 4

- Given the following definition of the vectors **v1**, **v2** and **v3**, what is a correct way to perform a vector addition of **v1** and **v2**?

```
struct v {int x, y;} v1, v2, v3;
```

- a) `v3 = v1 + v2;`
- b) `v3 = v1[x]*v2[y] + v1[y]*v2[x]`
- c) `v3[0] = v1[0] + v2[0];`  
`v3[1] = v1[1] + v2[1];`
-  d) `v3.x = v1.x + v2.x;`  
`v3.y = v1.y + v2.y;`
- e) `v3->x = v1->x + v2->x;`  
`v3->y = v1->y + v2->y;`

### Quiz: Question 5

- Given the following enumerator definition, what is printed by `printf("%d", two);`?


```
enum count {one, two, three, four = 4};
```

- a) `one`
- b) `two`
- c) `three`
- d) `1`
- e) `2`

## Quiz: Question 5

- Given the following enumerator definition, what is printed by `printf("%d", two);`?

```
enum count {one, two, three, four = 4};
```

- a) one
- b) two
- c) three
-  d) 1
- e) 2

## Quiz: Question 6

- Which of the following components do you find in every computer?  
(Check all that apply!)

- a) ROM
- b) RUM
- c) BUG
- d) CPU
- e) IBM

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### Quiz: Question 7

- What is the decimal value of the (unsigned) binary number  $01010101_2$  ?

- a) **01010101**
- b) **85**
- c) **101**
- d) **170**
- e) **255**

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
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### Quiz: Question 7

- What is the decimal value of the (unsigned) binary number  $01010101_2$  ?

a) 01010101

 b) 85

c) 101

d) 170

e) 255

### Quiz: Question 8

- What is the binary value of the hexadecimal number  $FF_{16}$  ?

a) 01010101

b) 10001000

c) 01110111

d) 00010001

e) 11111111

### Quiz: Question 8


- What is the binary value of the hexadecimal number  $FF_{16}$  ?

a) 01010101

b) 10001000

c) 01110111

d) 00010001

 e) 11111111

### Quiz: Question 9

- How many bits do you need to represent one hexadecimal digit?

a) 1


b) 2

c) 4

d) 8

e) 16

### Quiz: Question 9

- How many bits do you need to represent one hexadecimal digit?
  - a) 1
  - b) 2
  -  c) 4
  - d) 8
  - e) 16

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### Quiz: Question 10

- What could cause a **bus error**?  
(Check all that apply!)
  - a) Waking up late and missing the bus.
  - b) Calling a recursive function.
  - c) Accessing an array with an index out of range.
  - d) Referencing a pointer variable with invalid value.
  - e) Accessing an integer variable with invalid value.

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## Quiz: Question 11

- In C, which properties does every object have?  
(Check all that apply!)
  - a) A size.
  - b) A value.
  - c) A weight.
  - d) A type.
  - e) A location.

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## Quiz: Question 11

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(Check all that apply!)

- a) A size.
- b) A value.
- c) A weight.
- d) A type.
- e) A location.

## Quiz: Question 12

- Given the program segment below, what is the value of `*p` at the end?

- a) 1
- b) 2
- c) 3
- d) 4
- e) 5

```
1 int x[] = {1,2,3,4,5};  
2 int *p = &x[2];  
3  
4 p++;  
5 p -= 2;
```

## Quiz: Question 12

- Given the program segment below, what is the value of `*p` at the end?

- a) 1
- b) 2
- c) 3
- d) 4
- e) 5

```

1 int x[] = {1,2,3,4,5};
2 int *p = &x[2];
3
4 p++;
5 p -= 2;

```

## Quiz: Question 13

- Given the function and variable definitions shown below, which function call is valid? (Check all that apply!)

- a) `StrLen(cp);`
- b) `StrLen(ca);`
- c) `StrLen(c);`
- d) `StrLen(i);`
- e) `StrLen("abc");`

```

1 int StrLen(char *s)
2 { int l = 0;
3
4   while(*s)
5     { s++;
6       l++;
7     }
8   return l;
9 }
10 char *cp = "hello";
11 char ca[] = "world";
12 char c = 'c';
13 int i = 42;

```

## Quiz: Question 13

- Given the function and variable definitions shown below, which function call is valid? (Check all that apply!)

- a) `StrLen(cp);`
- b) `StrLen(ca);`
- c) `StrLen(c);`
- d) `StrLen(i);`
- e) `StrLen("abc");`

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10 char *cp = "hello";
11 char ca[] = "world";
12 char c = 'c';
13 int i = 42;

```

## Quiz: Question 14

- Which of the following are functions declared in `stdio.h`? (Check all that apply!)

- a) `printf`
- b) `printfd`
- c) `fprintf`
- d) `sprint`
- e) `fputs`

## Quiz: Question 14

- Which of the following are functions declared in `stdio.h`?  
(Check all that apply!)

- a) `printf`
- b) `printfd`
- c) `fprintf`
- d) `sprint`
- e) `fputs`

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## Quiz: Question 15

- What does the following code segment print?

```
1 char s[] = "Hppe!Mvdl!boe!Ibqqz!Ipmjebzt";
2 char *p;
3 p = &s[0];
4 while(*p)
5 { printf("%c", *p - 1);
6   p++;
7 }
```

- a) `Hppe!Mvdl!boe!Ibqqz!Ipmjebzt`
- b) `Happy Holidays and Good Luck`
- c) `Happy Luck and Good Holidays`
- d) `Good Holidays and Happy Luck`
- e) `Good Luck and Happy Holidays`

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## Quiz: Question 15

- What does the following code segment print?

```
1 char s[] = "Hppe!Mvdl!boe!Ibqqz!Ipmjebzt";
2 char *p;
3 p = &s[0];
4 while(*p)
5 { printf("%c", *p - 1);
6   p++;
7 }
```

- a) Hppe!Mvdl!boe!Ibqqz!Ipmjebzt
- b) Happy Holidays and Good Luck
- c) Happy Luck and Good Holidays
- d) Good Holidays and Happy Luck
-  e) **Good Luck and Happy Holidays**