EECS 10: Computational Methods in Electrical and Computer Engineering

Quiz on Lectures 18-24

Rainer Dömer

doemer@uci.edu

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

Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  - Rank 5: Question 7 (78% wrong answers)
- Given the definition `double p=0.0125;` which of the following C statements will print out `p = 1.25%` ?
  (Check all that apply! 2 pts.)
  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, "%%");`

Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  – Rank 5: Question 7 (78% wrong answers)
- Given the definition **double p=0.0125;** which of the following C statements will print out **p = 1.25%** ?
  (Check all that apply! 2 pts.)

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, "%%");**

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   3

Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  – Rank 4: Question 9 (79% wrong answers)
- In the program below, what is the result of calling **grade(80-90)**?

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  }
```

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   4

Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  - Rank 4: Question 9 (79% wrong answers)
- In the program below, what is the result of calling `grade(80-90)`?

  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  }
```

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   5

Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  - Rank 3: Question 1 (81% wrong answers)
- Which of the following statements is true for an *algorithm*?
  (Check all that apply! 2 pts.)

  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.

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   6

Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  - Rank 3: Question 1 (81% wrong answers)
- Which of the following statements is true for an *algorithm*?
  (Check all that apply! 2 pts.)

  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.

Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  - Rank 2: Question 3 (82% wrong answers)
- Which of the following declarations can be added to the program in line 8 without creating a compilation error?
  (Check all that apply! 2 pts.)

```
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);`

Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  - Rank 2: Question 3 (82% wrong answers)
- Which of the following declarations can be added to the program in line 8 without creating a compilation error?
  (Check all that apply! 2 pts.)

```
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);`

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   9

Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  - Top Rank: Question 25 (89% wrong answers)
- 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  }
```

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   10

Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  - Top Rank: Question 25 (89% wrong answers)
- 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  }
```

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   11

Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  - Top Rank: Question 25 (89% wrong answers)
- 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  }
```

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   12

Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  - Top Rank: Question 25 (89% wrong answers)
- 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  }
```

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   13

Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  - Top Rank: Question 25 (89% wrong answers)
- 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  }
```

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   14

Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  - Top Rank: Question 25 (89% wrong answers)
- 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  }
```

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   15

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[] = "ABC";`

c) `char s[] = 'ABC';`

d) `char s[4] = {"A", "B", "C"};`

e) `char s[3] = {'A', 'B', 'C'};`

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   16

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

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   17

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 declaration within a function definition.
  d) A function **f** that calls a function **g** which calls **f**.
  e) A function that returns no value.

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   18

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 declaration within a function definition.
  d) A function `f` that calls a function `g` which calls `f`.
  e) A function that returns no value.

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   19

Quiz: Question 3

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

  a) `1 2 3 4`
  b) `1 2 3`
  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 }
```

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   20

Quiz: Question 3

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

a) 1 2 3 4

b) 1 2 3

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  }
```

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   21

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[0] = v1[0] + v2[0];**
   v3[1] = v1[1] + v2[1];

c) **v3.x = v1.x + v2.x;**
   v3.y = v1.y + v2.y;

d) **v3 = v1[x]*v2[y] + v1[y]*v2[x]**

e) **v3->x = v1->x + v2->x;**
   v3->y = v1->y + v2->y;

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   22

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[0] = v1[0] + v2[0];`
   `v3[1] = v1[1] + v2[1];`

c) `v3.x = v1.x + v2.x;`
   `v3.y = v1.y + v2.y;`

d) `v3 = v1[x]*v2[y] + v1[y]*v2[x]`

e) `v3->x = v1->x + v2->x;`
   `v3->y = v1->y + v2->y;`

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   23

Quiz: Question 5

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

```
enum count {one, two, three, four = 5};
```

a) `one`

b) `two`

c) `0`

d) `1`

e) `2`

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   24

Quiz: Question 5

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

  `enum count {one, two, three, four = 5};`

  a) one
  b) two
  c) 0
  d) **1**
  e) 2

Quiz: Question 6

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

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

Quiz: Question 6

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

  a) RUM
  b) BUG
  → c) **ROM**
  → d) **CPU**
  e) IBM

Quiz: Question 7

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

  a) **10101010**
  b) **170**
  c) **85**
  d) **101**
  e) **255**

Quiz: Question 7

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

  a) `10101010`
  b) `170`
  c) **`85`**
  d) `101`
  e) `255`

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   29

Quiz: Question 8

- What is the binary value of the hexadecimal number $8F_{16}$?

  a) `01010101`
  b) `10010000`
  c) `01111111`
  d) `00011111`
  e) `10001111`

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   30

Quiz: Question 8

- What is the binary value of the hexadecimal number $8F_{16}$?

  a) `01010101`
  b) `10010000`
  c) `01111111`
  d) `00011111`
  e) **`10001111`**

Quiz: Question 9

- How many bits do you need to represent two hexadecimal digits?

  a) 1
  b) 2
  c) 4
  d) 8
  e) 16

Quiz: Question 9

- How many bits do you need to represent two hexadecimal digits?

  a) 1
  b) 2
  c) 4
  d) 8
  e) 16

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.

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.

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   35

Quiz: Question 11

- In C, which properties does every object have?
  (Check all that apply!)

  a) A size.
  b) A value.
  c) An index.
  d) A type.
  e) A location.

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   36

Quiz: Question 11

- In C, which properties does every object have?
  (Check all that apply!)

  a) A size.
  b) A value.
  c) An index.
  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 -= 3;
```

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 -= 3;
```

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   39

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 = "cp";
11 char ca[] = "cp";
12 char c = 'c';
13 int  i = 42;
```

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   40

Quiz: Question 13

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

```
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 = "cp";
11 char ca[] = "cp";
12 char c = 'c';
13 int  i = 42;
```

➡ a) **StrLen(cp);**
➡ b) **StrLen(ca);**
   c) StrLen(c);
   d) StrLen(i);
➡ e) **StrLen("abc");**

Quiz: Question 14

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

a) **printf**
b) **printd**
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) printd
  c) **fprintf**
  d) sprint
  e) **fputs**

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 Luck and Good Holidays**
  c) **Happy Holidays and Good Luck**
  d) **Good Holidays and Happy Luck**
  e) **Good Luck and Happy Holidays**

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 Luck and Good Holidays

c) Happy Holidays and Good Luck

d) Good Holidays and Happy Luck

e) **Good Luck and Happy Holidays**

EECS10: Computational Methods in ECE, Quiz 18-24   (c) 2006 R. Doemer   45