

Name \_\_\_\_\_

Please circle your section number:

022    023    024    025

Freshman    Sophomore    Junior    Senior    Other

Answer the multiple choice questions on a “Scantron Form”

Bubble in ONLY your Unix userid and your answers

DO NOT bubble in your id number or section  
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Answer the remaining questions directly on the exam paper.

### General Instructions

- The exam is 60% multiple choice, 30% programming, 10% short answer.
- The programming/short-answer questions start with number 20. You may want to tackle them first, since they may take more time.
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- You have 50 minutes. **Pace yourself**, and pay attention to the point values.
- Read *all* the directions *carefully* on each problem.
- Good luck.

Questions 1 through 3 deal with Unix Commands. Suppose your current working directory is `~/cisc105/lab03`.

1. (3 pts) Which of the following Unix commands will copy all files ending in `.c` from a directory `~/cisc105/lab02` into your current working directory?
  - (a) `cp ../lab02/*.c .`
  - (b) `cp lab02/*.c ..`
  - (c) `cp ../lab02/*.c ..`
  - (d) `cp ./lab02/*.c .`
  - (e) `cp ../lab02 *.c`
  
2. (3 pts) Which of the following will create a subdirectory called `~/cisc105/lab03/backup`?
  - (a) `cd backup`
  - (b) `chmod -R a+rx backup`
  - (c) `mkdir backup`
  - (d) `mkdir ../backup`
  - (e) `mkdir ~/backup`
  
3. (3 pts) Which of the following Unix commands will change your current working directory to your home directory?
  - (a) `cd ..`
  - (b) `cd`
  - (c) `cd ~/cisc105`
  - (d) `pwd`
  - (e) `pwd ..`

4. (4 pts) Which of the following tests whether x is odd?
- (a) `if (x % 2 = 0)`
  - (b) `if (x % 2 == 0)`
  - (c) `if (x % 2 = 1)`
  - (d) `if (x % 2 == 1)`
  - (e) `if (x / 2 == 1)`
5. (3 pts) Which of the following is *both* a logical operator and a unary operator?
- (a) `||`
  - (b) `&&`
  - (c) `++`
  - (d) `!`
6. (4 pts) What type of C variable is used with the conversion specifier `%d` ?
- (a) `int`
  - (b) `double`
  - (c) `printf`
  - (d) `scanf`
  - (e) both `printf` and `scanf`
7. (3 pts) Which of the following is a correct conversion specified for a variable of type `double`, with 5 spaces before the decimal point, and two afterwards?
- (a) `%8.2lf`
  - (b) `%5.2d`
  - (c) `%7.2lf`
  - (d) `%5.2lf`
  - (e) `%8.2d`
8. (3 pts) Which of the following tests whether x is equal to 10?
- (a) `if (x = 10)`
  - (b) `if (x = 10?)`
  - (c) `x = 10;`
  - (d) `if (x == 10)`
  - (e) `if (x == 10 ?)`

Questions 9 through 14 deal with code in q1.c, shown here:

```
1 /* q1.c P. Conrad for CISC105 Midterm Exam E01 10/10/05 */
2 /* Sample C program */
3
4 #include <stdio.h>
5
6 int someFunction(int x)
7 {
8     x = x * 2.0;
9
10    return x;
11 }
12
13
14 int main(void)
15 {
16     int y, z;
17
18     y = 7;
19
20     z = someFunction(y);
21
22     printf("y = %d z = %d\n", y, z);
23
24     return 0;
25 }
26 }
```

9. (3 pts) Which of the following is the *name* of the *formal parameter* of function `someFunction`?
- (a) x
  - (b) y
  - (c) z
  - (d) 7
  - (e) int
10. (3 pts) Which of the following is the *name* of the *actual argument* of function `someFunction()`?
- (a) x
  - (b) y
  - (c) z
  - (d) 7
  - (e) int

11. (3 pts) Which of the following is the type of the variable `x`
- (a) `x`
  - (b) `y`
  - (c) `z`
  - (d) `7`
  - (e) `int`
12. (3 pts) Lines 6-11 in the program listing show:
- (a) a function prototype
  - (b) a function call
  - (c) a function definition
  - (d) a formal parameter
  - (e) an actual parameter
13. (3 pts) Line 20 in the program listing shows:
- (a) a function prototype
  - (b) a function call
  - (c) a function definition
  - (d) a formal parameter
  - (e) an actual parameter
14. (4 pts) Which of the following would be the *output* of this program?
- (a) `y = 7 z = 0`
  - (b) `y = 7 z = 7`
  - (c) `y = 7 z = 14`
  - (d) `y = 14 z = 14`
  - (e) none of the above
15. (3 pts) Which of the following assigns the value of 2 times `y` to `x`?
- (a) `x == 2 * x;`
  - (b) `2 * y = x;`
  - (c) `x = 2 x y;`
  - (d) `x = 2 * y;`

16. (3 pts) The C statement  $x = x / 2;$  is equivalent to which of the following statements?

- (a)  $x /= 2;$
- (b)  $x += 2;$
- (c)  $x = 2;$
- (d)  $x = 2 / x ;$

17. (3 pts) The C expression  $( 25 \% 8 )$  evaluates to which of the following:

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

18. (3 pts) The C expression  $( 4 \% 50 )$  evaluates to which of the following:

- (a) 0
- (b) 2
- (c) 4
- (d) 12
- (e) 50

19. (3 pts) The C expression  $( 50 / 4 )$  evaluates to which of the following:

- (a) 0
- (b) 12
- (c) 12.5
- (d) 13
- (e) 50

## Section 2. Short Answer (answer on this sheet)

Suppose you have a C program in a file named `lab02.c`. What Unix command do you enter to perform each of the following operations?

20. (2 pts) Enter a text editor to make changes to the program:

21. (2 pts) Display the contents of the source code on your screen:

22. (3 pts) Compile the program:

23. (3 pts) Copy the program to a new file called `lab02a.c`

### Section 3. Programming (answer on this sheet)

24. (30 pts) Write a complete C++ program to solve the following problem, including

- an opening comment (*don't* put your name in the comment! -2 pts if you do!)
- all necessary “stuff” that goes before the main program
- a full main program complete with comments

**Problem Statement:** Ask the user of the program to input the length of a hiking trail in miles. Convert the length of that trail to kilometers, and print the result.

The conversion constant is 1 miles = 1.609344 kilometers.

Your program should provide appropriate prompts to the user, and should also label the output appropriately and neatly.

The output should include only one place after the decimal point.

The world's longest continuous hiking trail is 2167 miles long (the Appalachian Trail, which runs from Georgia to Maine), so you need to be able to handle four digits before the decimal point also.

Example output:

```
> ./q3
Enter length of hiking trail in miles: 10
Length in kilometers: 16.1
> ./q3
Enter length of hiking trail in miles: 5
Length in kilometers: 8.0
> ./q3
Enter length of hiking trail in miles: 2167
Length in kilometers: 3487.4
>
```

Space for your answer. There is more space on the next two pages in case you need it.

Extra space in case you need it

End of Exam. Total Points: 100

2DKB37TP182D61F3SQAPE38A

Answer Key, version 

A
---

1. (a)

2. (c)

3. (b)

4. (d)

5. (d)

Hanly and Koffman, p. 148, 150

6. (a)

7. (a)

8. (d)

9. (a)

See: Hanly and Koffman, p. 126-127

10. (b)

Hanly and Koffman, p. 126-127

11. (e)

12. (c)

Hanly and Koffman, p. 116

13. (b)

Hanly and Koffman, p. 48, p. 114

14. (c)

15. (d)

16. (a)

17. (b)

18. (c)

19. (b)

Integer division throws away the remainder.

## Section 2. Short Answer (answer on this sheet)

20. `emacs lab02.c` or `vi lab02.c`
21. `cat lab02.c` or `more lab02.c`
22. `gcc lab02.c` or `cc lab02.c` or `make lab02`
23. `cp lab02.c lab02a.c`

## Section 3. Programming (answer on this sheet)

```
24.1 /* E01.q3.c P. Conrad for CISC105, Fall 2005 */
2 /* Convert miles to kilometers */
3
4 #define KM_PER_MILE 1.609344
5
6 #include <stdio.h>
7
8 int main(void)
9 {
10     double length;
11
12     printf("Enter length of hiking trail in miles: ");
13     scanf("%lf",&length);
14
15     printf("Length in kilometers: %6.1lf\n",length * KM_PER_MILE);
16
17     return 0;
18 }
19 }
```

End of Key, version

**A**

Total Points: 0

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Questions 1 through 6 deal with code in q1.c, shown here:

```
1 /* q1.c P. Conrad for CISC105 Midterm Exam E01 10/10/05 */
2 /* Sample C program */
3
4 #include <stdio.h>
5
6 int someFunction(int x)
7 {
8     x = x * 2.0;
9
10    return x;
11 }
12
13
14 int main(void)
15 {
16     int y, z;
17
18     y = 7;
19
20     z = someFunction(y);
21
22     printf("y = %d z = %d\n", y, z);
23
24     return 0;
25 }
26 }
```

1. (3 pts) Which of the following is the *name* of the *formal parameter* of function `someFunction`?
  - (a) `x`
  - (b) `y`
  - (c) `z`
  - (d) `7`
  - (e) `int`
2. (3 pts) Which of the following is the *name* of the *actual argument* of function `someFunction()`?
  - (a) `x`
  - (b) `y`
  - (c) `z`
  - (d) `7`
  - (e) `int`

3. (3 pts) Which of the following is the type of the variable `x`
- (a) `x`
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- (a) `y = 7 z = 0`
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- (a) `if (x = 10)`
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18. (3 pts) The C expression `( 4 % 50 )` evaluates to which of the following:

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- (c) 4
- (d) 12
- (e) 50

19. (3 pts) The C expression `( 50 / 4 )` evaluates to which of the following:

- (a) 0
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- (c) 12.5
- (d) 13
- (e) 50

## Section 2. Short Answer (answer on this sheet)

Suppose you have a C program in a file named `lab02.c`. What Unix command do you enter to perform each of the following operations?

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22. (3 pts) Compile the program:

23. (3 pts) Copy the program to a new file called `lab02a.c`

### Section 3. Programming (answer on this sheet)

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2DKB37HP182D6SF3TQXBPE38B

Answer Key, version **B**

1. (a)

See: Hanly and Koffman, p. 126-127

2. (b)

Hanly and Koffman, p. 126-127

3. (e)

4. (c)

Hanly and Koffman, p. 116

5. (b)

Hanly and Koffman, p. 48, p. 114

6. (c)

7. (a)

8. (c)

9. (b)

10. (d)

11. (d)

Hanly and Koffman, p. 148, 150

12. (a)

13. (a)

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16. (a)

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8   int main(void)
9   {
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12    printf("Enter length of hiking trail in miles: ");
13    scanf("%lf",&length);
14
15    printf("Length in kilometers: %6.1lf\n",length * KM_PER_MILE);
16
17    return 0;
18
19 }
```

End of Key, version

**B**

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Suppose you have a C program in a file named `lab02.c`. What Unix command do you enter to perform each of the following operations?

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21. (2 pts) Display the contents of the source code on your screen:

22. (3 pts) Compile the program:

23. (3 pts) Copy the program to a new file called `lab02a.c`

### Section 3. Programming (answer on this sheet)

24. (30 pts) Write a complete C++ program to solve the following problem, including

- an opening comment (*don't* put your name in the comment! -2 pts if you do!)
- all necessary “stuff” that goes before the main program
- a full main program complete with comments

**Problem Statement:** Ask the user of the program to input the length of a hiking trail in miles. Convert the length of that trail to kilometers, and print the result.

The conversion constant is 1 miles = 1.609344 kilometers.

Your program should provide appropriate prompts to the user, and should also label the output appropriately and neatly.

The output should include only one place after the decimal point.

The world's longest continuous hiking trail is 2167 miles long (the Appalachian Trail, which runs from Georgia to Maine), so you need to be able to handle four digits before the decimal point also.

Example output:

```
> ./q3
Enter length of hiking trail in miles: 10
Length in kilometers: 16.1
> ./q3
Enter length of hiking trail in miles: 5
Length in kilometers: 8.0
> ./q3
Enter length of hiking trail in miles: 2167
Length in kilometers: 3487.4
>
```

Space for your answer. There is more space on the next two pages in case you need it.

Extra space in case you need it

End of Exam. Total Points: 100

2DKB37TP182D6JF3NQXCPE38C

Answer Key, version 

C
---

1. (a)

See: Hanly and Koffman, p. 126-127

2. (b)

Hanly and Koffman, p. 126-127

3. (e)

4. (c)

Hanly and Koffman, p. 116

5. (b)

Hanly and Koffman, p. 48, p. 114

6. (c)

7. (d)

8. (a)

9. (b)

10. (c)

11. (b)

Integer division throws away the remainder.

12. (d)

13. (d)

Hanly and Koffman, p. 148, 150

14. (a)

15. (a)

16. (d)

17. (a)

18. (c)

19. (b)

## Section 2. Short Answer (answer on this sheet)

20. `emacs lab02.c` or `vi lab02.c`
21. `cat lab02.c` or `more lab02.c`
22. `gcc lab02.c` or `cc lab02.c` or `make lab02`
23. `cp lab02.c lab02a.c`

## Section 3. Programming (answer on this sheet)

```
24.1 /* E01.q3.c P. Conrad for CISC105, Fall 2005 */
2 /* Convert miles to kilometers */
3
4 #define KM_PER_MILE 1.609344
5
6 #include <stdio.h>
7
8 int main(void)
9 {
10     double length;
11
12     printf("Enter length of hiking trail in miles: ");
13     scanf("%lf",&length);
14
15     printf("Length in kilometers: %6.1lf\n",length * KM_PER_MILE);
16
17     return 0;
18 }
19 }
```

End of Key, version  
Total Points: 0



Name\_\_\_\_\_

Please circle your section number:

022    023    024    025

Freshman    Sophomore    Junior    Senior    Other

Answer the multiple choice questions on a “Scantron Form”

Bubble in ONLY your Unix userid and your answers

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- You have 50 minutes. **Pace yourself**, and pay attention to the point values.
- Read *all* the directions *carefully* on each problem.
- Good luck.

Questions 1 through 3 deal with Unix Commands. Suppose your current working directory is `~/cisc105/lab03`.

1. (3 pts) Which of the following Unix commands will copy all files ending in `.c` from a directory `~/cisc105/lab02` into your current working directory?
  - (a) `cp ../lab02/*.c .`
  - (b) `cp lab02/*.c ..`
  - (c) `cp ../lab02/*.c ..`
  - (d) `cp ./lab02/*.c .`
  - (e) `cp ../lab02 *.c`
  
2. (3 pts) Which of the following will create a subdirectory called `~/cisc105/lab03/backup`?
  - (a) `cd backup`
  - (b) `chmod -R a+rx backup`
  - (c) `mkdir backup`
  - (d) `mkdir ../backup`
  - (e) `mkdir ~/backup`
  
3. (3 pts) Which of the following Unix commands will change your current working directory to your home directory?
  - (a) `cd ..`
  - (b) `cd`
  - (c) `cd ~/cisc105`
  - (d) `pwd`
  - (e) `pwd ..`

4. (3 pts) Which of the following assigns the value of 2 times y to x?
- (a) `x == 2 * x;`
  - (b) `2 * y = x;`
  - (c) `x = 2 x y;`
  - (d) `x = 2 * y;`
5. (3 pts) The C statement `x = x / 2;` is equivalent to which of the following statements?
- (a) `x /= 2;`
  - (b) `x += 2;`
  - (c) `x = 2;`
  - (d) `x = 2 / x ;`
6. (3 pts) The C expression `( 25 % 8 )` evaluates to which of the following:
- (a) 0
  - (b) 1
  - (c) 2
  - (d) 3
  - (e) 4
7. (3 pts) The C expression `( 4 % 50 )` evaluates to which of the following:
- (a) 0
  - (b) 2
  - (c) 4
  - (d) 12
  - (e) 50
8. (3 pts) The C expression `( 50 / 4 )` evaluates to which of the following:
- (a) 0
  - (b) 12
  - (c) 12.5
  - (d) 13
  - (e) 50

Questions 9 through 14 deal with code in q1.c, shown here:

```
1 /* q1.c P. Conrad for CISC105 Midterm Exam E01 10/10/05 */
2 /* Sample C program */
3
4 #include <stdio.h>
5
6 int someFunction(int x)
7 {
8     x = x * 2.0;
9
10    return x;
11 }
12
13
14 int main(void)
15 {
16     int y, z;
17
18     y = 7;
19
20     z = someFunction(y);
21
22     printf("y = %d z = %d\n", y, z);
23
24     return 0;
25 }
26 }
```

9. (3 pts) Which of the following is the *name* of the *formal parameter* of function `someFunction`?
- (a) x
  - (b) y
  - (c) z
  - (d) 7
  - (e) int
10. (3 pts) Which of the following is the *name* of the *actual argument* of function `someFunction()`?
- (a) x
  - (b) y
  - (c) z
  - (d) 7
  - (e) int

11. (3 pts) Which of the following is the type of the variable `x`
- (a) `x`
  - (b) `y`
  - (c) `z`
  - (d) `7`
  - (e) `int`
12. (3 pts) Lines 6-11 in the program listing show:
- (a) a function prototype
  - (b) a function call
  - (c) a function definition
  - (d) a formal parameter
  - (e) an actual parameter
13. (3 pts) Line 20 in the program listing shows:
- (a) a function prototype
  - (b) a function call
  - (c) a function definition
  - (d) a formal parameter
  - (e) an actual parameter
14. (4 pts) Which of the following would be the *output* of this program?
- (a) `y = 7 z = 0`
  - (b) `y = 7 z = 7`
  - (c) `y = 7 z = 14`
  - (d) `y = 14 z = 14`
  - (e) none of the above
15. (4 pts) Which of the following tests whether `x` is odd?
- (a) `if (x % 2 = 0)`
  - (b) `if (x % 2 == 0)`
  - (c) `if (x % 2 = 1)`
  - (d) `if (x % 2 == 1)`
  - (e) `if (x / 2 == 1)`

16. (3 pts) Which of the following is *both* a logical operator and a unary operator?
- (a) `||`
  - (b) `&&`
  - (c) `++`
  - (d) `!`
17. (4 pts) What type of C variable is used with the conversion specifier `%d` ?
- (a) `int`
  - (b) `double`
  - (c) `printf`
  - (d) `scanf`
  - (e) both `printf` and `scanf`
18. (3 pts) Which of the following is a correct conversion specified for a variable of type `double`, with 5 spaces before the decimal point, and two afterwards?
- (a) `%8.2lf`
  - (b) `%5.2d`
  - (c) `%7.2lf`
  - (d) `%5.2lf`
  - (e) `%8.2d`
19. (3 pts) Which of the following tests whether `x` is equal to 10?
- (a) `if (x = 10)`
  - (b) `if (x = 10?)`
  - (c) `x = 10;`
  - (d) `if (x == 10)`
  - (e) `if (x == 10 ?)`

## Section 2. Short Answer (answer on this sheet)

Suppose you have a C program in a file named `lab02.c`. What Unix command do you enter to perform each of the following operations?

20. (2 pts) Enter a text editor to make changes to the program:

21. (2 pts) Display the contents of the source code on your screen:

22. (3 pts) Compile the program:

23. (3 pts) Copy the program to a new file called `lab02a.c`

### Section 3. Programming (answer on this sheet)

24. (30 pts) Write a complete C++ program to solve the following problem, including

- an opening comment (*don't* put your name in the comment! -2 pts if you do!)
- all necessary “stuff” that goes before the main program
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**Problem Statement:** Ask the user of the program to input the length of a hiking trail in miles. Convert the length of that trail to kilometers, and print the result.

The conversion constant is 1 miles = 1.609344 kilometers.

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The world's longest continuous hiking trail is 2167 miles long (the Appalachian Trail, which runs from Georgia to Maine), so you need to be able to handle four digits before the decimal point also.

Example output:

```
> ./q3
Enter length of hiking trail in miles: 10
Length in kilometers: 16.1
> ./q3
Enter length of hiking trail in miles: 5
Length in kilometers: 8.0
> ./q3
Enter length of hiking trail in miles: 2167
Length in kilometers: 3487.4
>
```

Space for your answer. There is more space on the next two pages in case you need it.

Extra space in case you need it

End of Exam. Total Points: 100

2DKB37HP182D6UF3SQXDPE38A

Answer Key, version 

D
---

1. (a)
2. (c)
3. (b)
4. (d)
5. (a)
6. (b)
  
7. (c)
  
8. (b)  
Integer division throws away the remainder.
9. (a)  
  
See: Hanly and Koffman, p. 126-127
10. (b)  
Hanly and Koffman, p. 126-127
11. (e)
12. (c)  
Hanly and Koffman, p. 116
13. (b)  
Hanly and Koffman, p. 48, p. 114
14. (c)
15. (d)
16. (d)  
Hanly and Koffman, p. 148, 150
17. (a)
18. (a)
19. (d)

## Section 2. Short Answer (answer on this sheet)

20. `emacs lab02.c` or `vi lab02.c`
21. `cat lab02.c` or `more lab02.c`
22. `gcc lab02.c` or `cc lab02.c` or `make lab02`
23. `cp lab02.c lab02a.c`

## Section 3. Programming (answer on this sheet)

```
24.1 /* E01.q3.c P. Conrad for CISC105, Fall 2005 */
2 /* Convert miles to kilometers */
3
4 #define KM_PER_MILE 1.609344
5
6 #include <stdio.h>
7
8 int main(void)
9 {
10     double length;
11
12     printf("Enter length of hiking trail in miles: ");
13     scanf("%lf",&length);
14
15     printf("Length in kilometers: %6.1lf\n",length * KM_PER_MILE);
16
17     return 0;
18 }
19 }
```

End of Key, version

**D**

Total Points: 0

Name \_\_\_\_\_

Please circle your section number:

022    023    024    025

Freshman    Sophomore    Junior    Senior    Other

Answer the multiple choice questions on a “Scantron Form”

Bubble in ONLY your Unix userid and your answers

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- Read *all* the directions *carefully* on each problem.
- Good luck.

1. (4 pts) Which of the following tests whether x is odd?
  - (a) `if (x % 2 = 0)`
  - (b) `if (x % 2 == 0)`
  - (c) `if (x % 2 = 1)`
  - (d) `if (x % 2 == 1)`
  - (e) `if (x / 2 == 1)`
  
2. (3 pts) Which of the following is *both* a logical operator and a unary operator?
  - (a) `||`
  - (b) `&&`
  - (c) `++`
  - (d) `!`
  
3. (4 pts) What type of C variable is used with the conversion specifier `%d` ?
  - (a) `int`
  - (b) `double`
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  - (e) both `printf` and `scanf`
  
4. (3 pts) Which of the following is a correct conversion specified for a variable of type `double`, with 5 spaces before the decimal point, and two afterwards?
  - (a) `%8.2lf`
  - (b) `%5.2d`
  - (c) `%7.2lf`
  - (d) `%5.2lf`
  - (e) `%8.2d`
  
5. (3 pts) Which of the following tests whether x is equal to 10?
  - (a) `if (x = 10)`
  - (b) `if (x = 10?)`
  - (c) `x = 10;`
  - (d) `if (x == 10)`
  - (e) `if (x == 10 ?)`

Questions 6 through 8 deal with Unix Commands. Suppose your current working directory is `~/cisc105/lab03`.

6. (3 pts) Which of the following Unix commands will copy all files ending in `.c` from a directory `~/cisc105/lab02` into your current working directory?
- (a) `cp ../lab02/*.c .`
  - (b) `cp lab02/*.c ..`
  - (c) `cp ../lab02/*.c ..`
  - (d) `cp ./lab02/*.c .`
  - (e) `cp ../lab02 *.c`
7. (3 pts) Which of the following will create a subdirectory called `~/cisc105/lab03/backup`?
- (a) `cd backup`
  - (b) `chmod -R a+rx backup`
  - (c) `mkdir backup`
  - (d) `mkdir ../backup`
  - (e) `mkdir ~/backup`
8. (3 pts) Which of the following Unix commands will change your current working directory to your home directory?
- (a) `cd ..`
  - (b) `cd`
  - (c) `cd ~/cisc105`
  - (d) `pwd`
  - (e) `pwd ..`

9. (3 pts) Which of the following assigns the value of 2 times y to x?

- (a) `x == 2 * x;`
- (b) `2 * y = x;`
- (c) `x = 2 x y;`
- (d) `x = 2 * y;`

10. (3 pts) The C statement `x = x / 2;` is equivalent to which of the following statements?

- (a) `x /= 2;`
- (b) `x += 2;`
- (c) `x = 2;`
- (d) `x = 2 / x ;`

11. (3 pts) The C expression `( 25 % 8 )` evaluates to which of the following:

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

12. (3 pts) The C expression `( 4 % 50 )` evaluates to which of the following:

- (a) 0
- (b) 2
- (c) 4
- (d) 12
- (e) 50

13. (3 pts) The C expression `( 50 / 4 )` evaluates to which of the following:

- (a) 0
- (b) 12
- (c) 12.5
- (d) 13
- (e) 50

Questions 14 through 19 deal with code in q1.c, shown here:

```
1 /* q1.c P. Conrad for CISC105 Midterm Exam E01 10/10/05 */
2 /* Sample C program */
3
4 #include <stdio.h>
5
6 int someFunction(int x)
7 {
8     x = x * 2.0;
9
10    return x;
11 }
12
13
14 int main(void)
15 {
16     int y, z;
17
18     y = 7;
19
20     z = someFunction(y);
21
22     printf("y = %d z = %d\n", y, z);
23
24     return 0;
25 }
26 }
```

14. (3 pts) Which of the following is the *name* of the *formal parameter* of function `someFunction`?
- (a) x
  - (b) y
  - (c) z
  - (d) 7
  - (e) int
15. (3 pts) Which of the following is the *name* of the *actual argument* of function `someFunction()`?
- (a) x
  - (b) y
  - (c) z
  - (d) 7
  - (e) int

16. (3 pts) Which of the following is the type of the variable `x`

- (a) `x`
- (b) `y`
- (c) `z`
- (d) `7`
- (e) `int`

17. (3 pts) Lines 6-11 in the program listing show:

- (a) a function prototype
- (b) a function call
- (c) a function definition
- (d) a formal parameter
- (e) an actual parameter

18. (3 pts) Line 20 in the program listing shows:

- (a) a function prototype
- (b) a function call
- (c) a function definition
- (d) a formal parameter
- (e) an actual parameter

19. (4 pts) Which of the following would be the *output* of this program?

- (a) `y = 7 z = 0`
- (b) `y = 7 z = 7`
- (c) `y = 7 z = 14`
- (d) `y = 14 z = 14`
- (e) none of the above

## Section 2. Short Answer (answer on this sheet)

Suppose you have a C program in a file named `lab02.c`. What Unix command do you enter to perform each of the following operations?

20. (2 pts) Enter a text editor to make changes to the program:

21. (2 pts) Display the contents of the source code on your screen:

22. (3 pts) Compile the program:

23. (3 pts) Copy the program to a new file called `lab02a.c`

### Section 3. Programming (answer on this sheet)

24. (30 pts) Write a complete C++ program to solve the following problem, including

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```

Space for your answer. There is more space on the next two pages in case you need it.

Extra space in case you need it

End of Exam. Total Points: 100

2DKB37TP182D61F3TXEPE38B

Answer Key, version 

E
---

1. (d)
2. (d)  
Hanly and Koffman, p. 148, 150
3. (a)
4. (a)
5. (d)
6. (a)
7. (c)
8. (b)
9. (d)
10. (a)
11. (b)
  
12. (c)
  
13. (b)  
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17. (c)  
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## Section 3. Programming (answer on this sheet)

```
24.1 /* E01.q3.c P. Conrad for CISC105, Fall 2005 */
2 /* Convert miles to kilometers */
3
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5
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7
8 int main(void)
9 {
10     double length;
11
12     printf("Enter length of hiking trail in miles: ");
13     scanf("%lf",&length);
14
15     printf("Length in kilometers: %6.1lf\n",length * KM_PER_MILE);
16
17     return 0;
18 }
19 }
```

End of Key, version



Total Points: 0

Name \_\_\_\_\_

Please circle your section number:

022    023    024    025

Freshman    Sophomore    Junior    Senior    Other

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1. (4 pts) Which of the following tests whether x is odd?
  - (a) `if (x % 2 = 0)`
  - (b) `if (x % 2 == 0)`
  - (c) `if (x % 2 = 1)`
  - (d) `if (x % 2 == 1)`
  - (e) `if (x / 2 == 1)`
  
2. (3 pts) Which of the following is *both* a logical operator and a unary operator?
  - (a) `||`
  - (b) `&&`
  - (c) `++`
  - (d) `!`
  
3. (4 pts) What type of C variable is used with the conversion specifier `%d` ?
  - (a) `int`
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  - (e) both `printf` and `scanf`
  
4. (3 pts) Which of the following is a correct conversion specified for a variable of type `double`, with 5 spaces before the decimal point, and two afterwards?
  - (a) `%8.2lf`
  - (b) `%5.2d`
  - (c) `%7.2lf`
  - (d) `%5.2lf`
  - (e) `%8.2d`
  
5. (3 pts) Which of the following tests whether x is equal to 10?
  - (a) `if (x = 10)`
  - (b) `if (x = 10?)`
  - (c) `x = 10;`
  - (d) `if (x == 10)`
  - (e) `if (x == 10 ?)`

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- (b) `x += 2;`
- (c) `x = 2;`
- (d) `x = 2 / x ;`

8. (3 pts) The C expression `( 25 % 8 )` evaluates to which of the following:

- (a) 0
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- (c) 2
- (d) 3
- (e) 4

9. (3 pts) The C expression `( 4 % 50 )` evaluates to which of the following:

- (a) 0
- (b) 2
- (c) 4
- (d) 12
- (e) 50

10. (3 pts) The C expression `( 50 / 4 )` evaluates to which of the following:

- (a) 0
- (b) 12
- (c) 12.5
- (d) 13
- (e) 50

Questions 11 through 13 deal with Unix Commands. Suppose your current working directory is `~/cisc105/lab03`.

11. (3 pts) Which of the following Unix commands will copy all files ending in `.c` from a directory `~/cisc105/lab02` into your current working directory?
  - (a) `cp ../lab02/*.c .`
  - (b) `cp lab02/*.c ..`
  - (c) `cp ../lab02/*.c ..`
  - (d) `cp ./lab02/*.c .`
  - (e) `cp ../lab02 *.c`
  
12. (3 pts) Which of the following will create a subdirectory called `~/cisc105/lab03/backup`?
  - (a) `cd backup`
  - (b) `chmod -R a+rx backup`
  - (c) `mkdir backup`
  - (d) `mkdir ../backup`
  - (e) `mkdir ~/backup`
  
13. (3 pts) Which of the following Unix commands will change your current working directory to your home directory?
  - (a) `cd ..`
  - (b) `cd`
  - (c) `cd ~/cisc105`
  - (d) `pwd`
  - (e) `pwd ..`

Questions 14 through 19 deal with code in q1.c, shown here:

```
1 /* q1.c P. Conrad for CISC105 Midterm Exam E01 10/10/05 */
2 /* Sample C program */
3
4 #include <stdio.h>
5
6 int someFunction(int x)
7 {
8     x = x * 2.0;
9
10    return x;
11 }
12
13
14 int main(void)
15 {
16     int y, z;
17
18     y = 7;
19
20     z = someFunction(y);
21
22     printf("y = %d z = %d\n", y, z);
23
24     return 0;
25 }
26 }
```

14. (3 pts) Which of the following is the *name* of the *formal parameter* of function `someFunction`?
- (a) x
  - (b) y
  - (c) z
  - (d) 7
  - (e) int
15. (3 pts) Which of the following is the *name* of the *actual argument* of function `someFunction()`?
- (a) x
  - (b) y
  - (c) z
  - (d) 7
  - (e) int

16. (3 pts) Which of the following is the type of the variable `x`

- (a) `x`
- (b) `y`
- (c) `z`
- (d) `7`
- (e) `int`

17. (3 pts) Lines 6-11 in the program listing show:

- (a) a function prototype
- (b) a function call
- (c) a function definition
- (d) a formal parameter
- (e) an actual parameter

18. (3 pts) Line 20 in the program listing shows:

- (a) a function prototype
- (b) a function call
- (c) a function definition
- (d) a formal parameter
- (e) an actual parameter

19. (4 pts) Which of the following would be the *output* of this program?

- (a) `y = 7 z = 0`
- (b) `y = 7 z = 7`
- (c) `y = 7 z = 14`
- (d) `y = 14 z = 14`
- (e) none of the above

## Section 2. Short Answer (answer on this sheet)

Suppose you have a C program in a file named `lab02.c`. What Unix command do you enter to perform each of the following operations?

20. (2 pts) Enter a text editor to make changes to the program:

21. (2 pts) Display the contents of the source code on your screen:

22. (3 pts) Compile the program:

23. (3 pts) Copy the program to a new file called `lab02a.c`

### Section 3. Programming (answer on this sheet)

24. (30 pts) Write a complete C++ program to solve the following problem, including

- an opening comment (*don't* put your name in the comment! -2 pts if you do!)
- all necessary “stuff” that goes before the main program
- a full main program complete with comments

**Problem Statement:** Ask the user of the program to input the length of a hiking trail in miles. Convert the length of that trail to kilometers, and print the result.

The conversion constant is 1 miles = 1.609344 kilometers.

Your program should provide appropriate prompts to the user, and should also label the output appropriately and neatly.

The output should include only one place after the decimal point.

The world's longest continuous hiking trail is 2167 miles long (the Appalachian Trail, which runs from Georgia to Maine), so you need to be able to handle four digits before the decimal point also.

Example output:

```
> ./q3
Enter length of hiking trail in miles: 10
Length in kilometers: 16.1
> ./q3
Enter length of hiking trail in miles: 5
Length in kilometers: 8.0
> ./q3
Enter length of hiking trail in miles: 2167
Length in kilometers: 3487.4
>
```

Space for your answer. There is more space on the next two pages in case you need it.

Extra space in case you need it

End of Exam. Total Points: 100

2DKB37HP182D6SF3NQXFPE38C

Answer Key, version 

F
---

1. (d)
2. (d)  
Hanly and Koffman, p. 148, 150
3. (a)
4. (a)
5. (d)
6. (d)
7. (a)
8. (b)
  
9. (c)
  
10. (b)  
Integer division throws away the remainder.
11. (a)
12. (c)
13. (b)
14. (a)  
  
See: Hanly and Koffman, p. 126-127
15. (b)  
Hanly and Koffman, p. 126-127
16. (e)
17. (c)  
Hanly and Koffman, p. 116
18. (b)  
Hanly and Koffman, p. 48, p. 114
19. (c)

## Section 2. Short Answer (answer on this sheet)

20. `emacs lab02.c` or `vi lab02.c`
21. `cat lab02.c` or `more lab02.c`
22. `gcc lab02.c` or `cc lab02.c` or `make lab02`
23. `cp lab02.c lab02a.c`

## Section 3. Programming (answer on this sheet)

```
24.1 /* E01.q3.c P. Conrad for CISC105, Fall 2005 */
2 /* Convert miles to kilometers */
3
4 #define KM_PER_MILE 1.609344
5
6 #include <stdio.h>
7
8 int main(void)
9 {
10     double length;
11
12     printf("Enter length of hiking trail in miles: ");
13     scanf("%lf",&length);
14
15     printf("Length in kilometers: %6.1lf\n",length * KM_PER_MILE);
16
17     return 0;
18 }
19 }
```

End of Key, version

**F**

Total Points: 0

Name \_\_\_\_\_

Please circle your section number:

022    023    024    025

Freshman    Sophomore    Junior    Senior    Other

Answer the multiple choice questions on a “Scantron Form”

Bubble in **ONLY** your Unix userid and your answers

**DO NOT** bubble in your id number or section  
If you bubble in your SSN, the computer will **reject your form!!!**

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### General Instructions

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- You have 50 minutes. **Pace yourself**, and pay attention to the point values.
- Read *all* the directions *carefully* on each problem.
- Good luck.

Questions 1 through 3 deal with Unix Commands. Suppose your current working directory is `~/cisc105/lab03`.

1. (3 pts) Which of the following Unix commands will copy all files ending in `.c` from a directory `~/cisc105/lab02` into your current working directory?
  - (a) `cp ../lab02/*.c .`
  - (b) `cp lab02/*.c ..`
  - (c) `cp ../lab02/*.c ..`
  - (d) `cp ./lab02/*.c .`
  - (e) `cp ../lab02 *.c`
  
2. (3 pts) Which of the following will create a subdirectory called `~/cisc105/lab03/backup`?
  - (a) `cd backup`
  - (b) `chmod -R a+rx backup`
  - (c) `mkdir backup`
  - (d) `mkdir ../backup`
  - (e) `mkdir ~/backup`
  
3. (3 pts) Which of the following Unix commands will change your current working directory to your home directory?
  - (a) `cd ..`
  - (b) `cd`
  - (c) `cd ~/cisc105`
  - (d) `pwd`
  - (e) `pwd ..`

4. (3 pts) Which of the following assigns the value of 2 times y to x?
- (a) `x == 2 * x;`
  - (b) `2 * y = x;`
  - (c) `x = 2 x y;`
  - (d) `x = 2 * y;`
5. (3 pts) The C statement `x = x / 2;` is equivalent to which of the following statements?
- (a) `x /= 2;`
  - (b) `x += 2;`
  - (c) `x = 2;`
  - (d) `x = 2 / x ;`
6. (3 pts) The C expression `( 25 % 8 )` evaluates to which of the following:
- (a) 0
  - (b) 1
  - (c) 2
  - (d) 3
  - (e) 4
7. (3 pts) The C expression `( 4 % 50 )` evaluates to which of the following:
- (a) 0
  - (b) 2
  - (c) 4
  - (d) 12
  - (e) 50
8. (3 pts) The C expression `( 50 / 4 )` evaluates to which of the following:
- (a) 0
  - (b) 12
  - (c) 12.5
  - (d) 13
  - (e) 50

9. (4 pts) Which of the following tests whether x is odd?
- (a) `if (x % 2 = 0)`
  - (b) `if (x % 2 == 0)`
  - (c) `if (x % 2 = 1)`
  - (d) `if (x % 2 == 1)`
  - (e) `if (x / 2 == 1)`
10. (3 pts) Which of the following is *both* a logical operator and a unary operator?
- (a) `||`
  - (b) `&&`
  - (c) `++`
  - (d) `!`
11. (4 pts) What type of C variable is used with the conversion specifier `%d` ?
- (a) `int`
  - (b) `double`
  - (c) `printf`
  - (d) `scanf`
  - (e) both `printf` and `scanf`
12. (3 pts) Which of the following is a correct conversion specified for a variable of type `double`, with 5 spaces before the decimal point, and two afterwards?
- (a) `%8.2lf`
  - (b) `%5.2d`
  - (c) `%7.2lf`
  - (d) `%5.2lf`
  - (e) `%8.2d`
13. (3 pts) Which of the following tests whether x is equal to 10?
- (a) `if (x = 10)`
  - (b) `if (x = 10?)`
  - (c) `x = 10;`
  - (d) `if (x == 10)`
  - (e) `if (x == 10 ?)`

Questions 14 through 19 deal with code in q1.c, shown here:

```
1 /* q1.c P. Conrad for CISC105 Midterm Exam E01 10/10/05 */
2 /* Sample C program */
3
4 #include <stdio.h>
5
6 int someFunction(int x)
7 {
8     x = x * 2.0;
9
10    return x;
11 }
12
13
14 int main(void)
15 {
16     int y, z;
17
18     y = 7;
19
20     z = someFunction(y);
21
22     printf("y = %d z = %d\n", y, z);
23
24     return 0;
25 }
26 }
```

14. (3 pts) Which of the following is the *name* of the *formal parameter* of function `someFunction`?
- (a) x
  - (b) y
  - (c) z
  - (d) 7
  - (e) int
15. (3 pts) Which of the following is the *name* of the *actual argument* of function `someFunction()`?
- (a) x
  - (b) y
  - (c) z
  - (d) 7
  - (e) int

16. (3 pts) Which of the following is the type of the variable `x`

- (a) `x`
- (b) `y`
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- (d) `7`
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17. (3 pts) Lines 6-11 in the program listing show:

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18. (3 pts) Line 20 in the program listing shows:

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19. (4 pts) Which of the following would be the *output* of this program?

- (a) `y = 7 z = 0`
- (b) `y = 7 z = 7`
- (c) `y = 7 z = 14`
- (d) `y = 14 z = 14`
- (e) none of the above

## Section 2. Short Answer (answer on this sheet)

Suppose you have a C program in a file named `lab02.c`. What Unix command do you enter to perform each of the following operations?

20. (2 pts) Enter a text editor to make changes to the program:

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22. (3 pts) Compile the program:

23. (3 pts) Copy the program to a new file called `lab02a.c`

### Section 3. Programming (answer on this sheet)

24. (30 pts) Write a complete C++ program to solve the following problem, including

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```
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Enter length of hiking trail in miles: 2167
Length in kilometers: 3487.4
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```

Space for your answer. There is more space on the next two pages in case you need it.

Extra space in case you need it

End of Exam. Total Points: 100

2DKB37TP182D6JF3SXGPE38A

Answer Key, version 

<b>G</b>
----------

1. (a)
2. (c)
3. (b)
4. (d)
5. (a)
6. (b)
  
7. (c)
  
8. (b)  
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9. (d)
10. (d)  
Hanly and Koffman, p. 148, 150
11. (a)
12. (a)
13. (d)
14. (a)  
  
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15. (b)  
Hanly and Koffman, p. 126-127
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17. (c)  
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## Section 2. Short Answer (answer on this sheet)

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21. `cat lab02.c` or `more lab02.c`
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```
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2 /* Convert miles to kilometers */
3
4 #define KM_PER_MILE 1.609344
5
6 #include <stdio.h>
7
8 int main(void)
9 {
10     double length;
11
12     printf("Enter length of hiking trail in miles: ");
13     scanf("%lf",&length);
14
15     printf("Length in kilometers: %6.1lf\n",length * KM_PER_MILE);
16
17     return 0;
18 }
19
```

End of Key, version  
Total Points: 0



Name \_\_\_\_\_

Please circle your section number:

022    023    024    025

Freshman    Sophomore    Junior    Senior    Other

Answer the multiple choice questions on a “Scantron Form”

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1. (3 pts) Which of the following assigns the value of 2 times y to x?
  - (a) `x == 2 * x;`
  - (b) `2 * y = x;`
  - (c) `x = 2 x y;`
  - (d) `x = 2 * y;`
  
2. (3 pts) The C statement `x = x / 2;` is equivalent to which of the following statements?
  - (a) `x /= 2;`
  - (b) `x += 2;`
  - (c) `x = 2;`
  - (d) `x = 2 / x ;`
  
3. (3 pts) The C expression `( 25 % 8 )` evaluates to which of the following:
  - (a) 0
  - (b) 1
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  - (d) 3
  - (e) 4
  
4. (3 pts) The C expression `( 4 % 50 )` evaluates to which of the following:
  - (a) 0
  - (b) 2
  - (c) 4
  - (d) 12
  - (e) 50
  
5. (3 pts) The C expression `( 50 / 4 )` evaluates to which of the following:
  - (a) 0
  - (b) 12
  - (c) 12.5
  - (d) 13
  - (e) 50

Questions 6 through 11 deal with code in q1.c, shown here:

```
1 /* q1.c P. Conrad for CISC105 Midterm Exam E01 10/10/05 */
2 /* Sample C program */
3
4 #include <stdio.h>
5
6 int someFunction(int x)
7 {
8     x = x * 2.0;
9
10    return x;
11 }
12
13
14 int main(void)
15 {
16     int y, z;
17
18     y = 7;
19
20     z = someFunction(y);
21
22     printf("y = %d z = %d\n", y, z);
23
24     return 0;
25 }
26 }
```

6. (3 pts) Which of the following is the *name* of the *formal parameter* of function `someFunction`?
- (a) x
  - (b) y
  - (c) z
  - (d) 7
  - (e) int
7. (3 pts) Which of the following is the *name* of the *actual argument* of function `someFunction()`?
- (a) x
  - (b) y
  - (c) z
  - (d) 7
  - (e) int

8. (3 pts) Which of the following is the type of the variable `x`
- (a) `x`
  - (b) `y`
  - (c) `z`
  - (d) `7`
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  - (b) `y = 7 z = 7`
  - (c) `y = 7 z = 14`
  - (d) `y = 14 z = 14`
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Questions 12 through 14 deal with Unix Commands. Suppose your current working directory is `~/cisc105/lab03`.

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  - (c) `%7.2lf`
  - (d) `%5.2lf`
  - (e) `%8.2d`
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- (a) `if (x = 10)`
  - (b) `if (x = 10?)`
  - (c) `x = 10;`
  - (d) `if (x == 10)`
  - (e) `if (x == 10 ?)`

## Section 2. Short Answer (answer on this sheet)

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21. (2 pts) Display the contents of the source code on your screen:

22. (3 pts) Compile the program:

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```
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Enter length of hiking trail in miles: 10
Length in kilometers: 16.1
> ./q3
Enter length of hiking trail in miles: 5
Length in kilometers: 8.0
> ./q3
Enter length of hiking trail in miles: 2167
Length in kilometers: 3487.4
>
```

Space for your answer. There is more space on the next two pages in case you need it.

Extra space in case you need it

End of Exam. Total Points: 100

2DKB37HP182D6UF3TQXHPE38B

Answer Key, version 

H
---

1. (d)
2. (a)
3. (b)
4. (c)
5. (b)  
Integer division throws away the remainder.
6. (a)  
  
See: Hanly and Koffman, p. 126-127
7. (b)  
Hanly and Koffman, p. 126-127
8. (e)
9. (c)  
Hanly and Koffman, p. 116
10. (b)  
Hanly and Koffman, p. 48, p. 114
11. (c)
12. (a)
13. (c)
14. (b)
15. (d)
16. (d)  
Hanly and Koffman, p. 148, 150
17. (a)
18. (a)
19. (d)

## Section 2. Short Answer (answer on this sheet)

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21. `cat lab02.c` or `more lab02.c`
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23. `cp lab02.c lab02a.c`

## Section 3. Programming (answer on this sheet)

```
24.1 /* E01.q3.c P. Conrad for CISC105, Fall 2005 */
2 /* Convert miles to kilometers */
3
4 #define KM_PER_MILE 1.609344
5
6 #include <stdio.h>
7
8 int main(void)
9 {
10     double length;
11
12     printf("Enter length of hiking trail in miles: ");
13     scanf("%lf",&length);
14
15     printf("Length in kilometers: %6.1lf\n",length * KM_PER_MILE);
16
17     return 0;
18 }
19 }
```

End of Key, version



Total Points: 0