Exam 1 – CS 141 – Program Design II – Prof. Hodges & Prof. Theys

This is a closed-book exam. No calculators allowed. Turn off your cellphone.

Raise your hand if you have any questions.

Name: _____ UIN: _____

Please read this page and follow the directions before proceeding with the rest of the exam. You are not allowed to use any external resources (book, calculators, notes, neighbors, electronic devices, etc.).

1) Put your name AND UIN on this page of this exam. You will turn in this page with your answers.
2) Please read and sign the academic integrity statement at the bottom of this page.
3) I recommend reading the entire exam before completing any problems.
4) Page 8 is blank if you need more space for a problem, be sure to still place your answer in the space provided

Student's Statement of Academic Integrity:

I, _____, certify that I will not do and have not done anything during this exam (or before this exam) to give me an unfair academic advantage.

Unless specifically allowed by the instructor, during the exam I will not and did not:

1. Use any electronic devices or resources;
2. Consult any book or course-related materials;
3. Communicate with or look at any other person's work.

I understand that violating this honor code will result in an Academic Integrity Incident Report to the UIC Office of the Dean of Students, which will become part of my academic record and may result in suspension, termination, or denial of a degree from UIC.

Signature: _____

Failure to sign the above statement is a violation of policy by the College of Engineering's Accreditation Committee and will result in the exam not being graded and the student receiving a score of 0/100 for the exam.

Time limit: 1 hour

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Answer Sheet

There are 20 problems, each worth 5 points, 20 * 5 = 100 points

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1. Which of the following are valid identifiers (write all of a-e that apply)?
   a. `10_itemsCost`
   b. `aVariable`
   c. `carModel`
   d. `_someVariable`
   e. `costOfItem`

2. How many times is “hello” printed in the following code?

```
int val = 0;
int count = 0;
while (val < 10) {
   if ((count <= 6) && (val >= 5)) {
      cout << "hello" <<endl;
   }
   count++;
   val++;
}
```

3. What is the output of the following code?

```
int x = 5;
if( x = 4) {
   cout << "is 4";
   }
else {
   cout << "not 4";
   }
```

4. What is the output of the following code?

```
double x,y;
x = 8.0;
y = 3/5 * x;
cout << y << endl;
```

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5. The code below is trying to print the table of values shown below.

```
for( int row = 1; row < 8; row++) {
   for( int col = 1; col < 8; col++){
      cout << setw( 4) << row * col;
   }
}
```

```
   1   2   3   4   5   6   7
   2   4   6   8  10  12  14
   3   6   9  12  15  18  21
   4   8  12  16  20  24  28
   5  10  15  20  25  30  35
   6  12  18  24  30  36  42
   7  14  21  28  35  42  49
```

What is the actual output of the code shown above?

   a. The multiplication table as shown
   b. A table of numbers, but not the values shown in the multiplication table
   c. The multiplication table and rows as shown, except some columns are not correctly lined up
   d. The values in the multiplication table with correct column spacing, except with incorrect line breaks

6. What is output when the following code executes?

```
int value = 13;
switch (value){
    case 10: cout << 5 << ' ' << endl; break;
    case 13: cout << 7 ;
    case 11: cout << 15 ; break;
    case 12: cout << 12;
    default: cout << 0; break;
}
```

7. What is the output of the following code? Write “infinite loop” if this will result in one.

```
int newVar;
for (newVar=6;newVar;newVar--) {
    cout << newVar << " " ;
}
```

8. What is the output of the following code?

```
int num = 12;
if (num < 4) {
    cout << "A";
} else if (num > 8 || num < 10) {
    cout << "B";
} else if (num > 6) {
    cout << "C";
}
```

9. What is the output of the following code?

```
int i;
for (i='g'; i < 'm'; i=i+3)
    cout << (char) i << " ";
cout << endl;
```

10. What is the value of `word3` after the following code executes?

```
string word3;
word3 = "A short string";
cout << word3.replace(word3.find("short"),5,"long");
```

11. What is the value of sum after this loop is run?

```
int sum = 0;
for (int i = 0; i < 5; i++) {
    sum += i;
}
```

12. Given the code

```
string greeting = "hello";
greeting.at(8);
greeting[8];
```

Which of the following is true (choose one)?

A. `greeting.at(8)` will cause an exception to be thrown
B. `greeting[8]` will cause an exception to be thrown
C. Both lines cause an exception
D. Neither line will cause an exception

13. What is the output of the following code?

```
for (int i = 1; i < 8; i++) {
    if (i % 4 == 0) {
        continue;
    }
    cout << i;
}
```

14. What is the output of the following code?

```
int score = 102;
while (score > 90) {
    cout << (score > 100 ? 100 : score) << " ";
    score -= 5;
}
```

15. What is the output of the following code? If the output line causes a compile error, write "compile error" as the answer.

```
int sum = 0;
for (int i = 0; i < 7; i++) {
     sum += i;
}
cout << i;
```

16. What is the value of sum after the following code? Write "infinite loop" if this will result in one.

```
int i = 1;
int sum = 0;
while (i < 7) {
    sum += i;
    if (sum > 11) {
        break;
    }
    i++;
}
```

17. What is the output of the following code?

```
string word6 = "Data Input";
char aChar = word6[5] - 1;
char bChar = tolower(word6.at(5));
cout << aChar << bChar ;
```

18. What is the output of the following code?

```
int count = 0;
for (int i = 0; i < 4; i++) {
    for (int j = 0; j < 2; j++) {
        count++;
    }
}
cout << count << endl;
```

19. What is the output of the following code? If the loop causes an infinite loop, write "infinite loop" as the answer.

```
int i=2;
int sum=0;
do {
    sum = sum + i;
} while (i > 5);
cout << sum;
```

20. What is the value of `calc` after the following code is run?

```
double calc = 3 + 6 / 4.0;
```

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