Exam 2

CSI 201: Computer Science 1

Fall 2018

Professor: Dr. Ramsey

I understand that this exam is closed books and closed notes and is to be completed without a calculator, phone, or other computer. I will not talk about this exam with other classmates before Dr. Ramsey's approval to do so. It is clear that I am cheating or plagiarizing if the items above are seen in use by me during the exam. I am **NOT** allowed to use any external resources to complete this exam. All of the work that I am submitting for this exam is mine. I understand that it is also my job to protect my own answers from others. I understand that I can cheat or plagiarize on an exam by my own collaboration but also through my own negligence (in keeping my answers secret). I have completed this exam in accordance with the Washington College Honor Code. I understand that images, video and sound may be taken and recorded during this exam. I understand my grade may include good style and programming practice throughout. I have read directions thoroughly and will read each question completely.

Name: _____

Signature: _____

1. [10 points] Each block of code has 4 possible options for the answer. You may simple circle the answer that corresponds to the output of the code snippets. Assume the code segments are continuous. You may make additional notations if you like, but clearly circle only one letter. If you make a mistake, place an X through the letter and circle the answer you actually care about. If all else fails, write your answer on the back page of the test with a note.

Code Snippet (Continuous):	**Console Output (circle the correct answer):**

`vector<int> squares;`
`for(int i = 0; i < 10; ++i) {`
`  squares.push_back(i*i);`
`}`
`cout << squares.size() << " ";`
`cout << squares.at(3) << endl;`
	A) 9 9
	B) 9 16
	C) 10 16
	D) 10 9

`//recall: code is continuous ↑`
`vector<int> pes;`
`pes = squares;`
`pes.at(3) = pes.at(3) * 2;`
`cout << pes.size() << " ";`
`cout << pes.at(3) << endl;`
	A) 9 18
	B) 10 32
	C) 10 18
	D) run-time error

`//recall: code is continuous ↑`
`for(int i = 2; i < 4; ++i) {`
`  cout << squares.at(i) << endl;`
`}`
	A) 4 9 16
	B) 4 18
	C) 4 9
	D) 1 4 9

`//recall: code is continuous ↑`
`unsigned i = 3;`
`squares.at(i) = squares.at(i+1);`
`squares.at(i+1) = squares.at(i);`
`cout << squares.at(i) << " ";`
`cout << squares.at(i+1) << endl;`
	A) 9 9
	B) 9 16
	C) 16 9
	D) 16 16

`//recall: code is continuous ↑`
`unsigned j = 5;`
`cout << squares.at(j) % 2 << " ";`
`cout << squares.at(j % 2) << endl;`
	A) 1 25
	B) 0 1
	C) 1 4
	D) 1 1

2. Concepts: Answer the following briefly. When code is requested, your response should consist of less than 3 lines of code.

   Use the function to answer the following questions:

```
double gpa(int num1, int num2, string letterGrade) {
   int sum = num1 + num2;
   if(letterGrade == "A") {
     sum = sum + 4;
   }
   else if(letterGrade == "B") {
     sum = sum + 3;
   }
   else if(letterGrade == "C") {
     sum = sum + 2;
   }
   return sum / 3.0;
}
```

   (a) [2 points] What is the console output of: `cout << gpa(3, 4, "C");`

   (b) [2 points] Give an example function call of gpa that would return 1.0.

   (c) [2 points] Create a vector designed to hold the names of 42 various animal types, such as: cats, dogs, horses, spiders, and more. The vector is called `animal_types` and when your code is complete, the size of the vector should be 42.

(d) [2 points] Show the proper way to put a random number from 1 to 20 into an integer variable named `to_hit`.

(e) [2 points] Name 2 functions you can find in cmath.

(f) [2 points] What is the return type of a function? How is it used?

(g) [2 points] What is a good strategy that you would tell other people to do to be successful in this course in the future? Did you actually use this strategy thus far this semester? Explain.

3. Answer the following two questions with code as appropriate.

   (a) [10 points] You've been given a vector of integers. However, your company, CRAP (Condensing Rarities And Profit), wants you to condense the data down into another vector to make it half the size. Your boss at CRAP tells you to do this by copying every other element from the first vector into the second. Please provide the code to create the second vector according to your bosses wishes down below. (If you want some brownie points with your CRAP boss, try offering up a second solution which averages every pair of elements instead of simply skipping over every other element. Be sure to clearly answer the original question for formal credit first.)

```
int main() {
vector<int> first;
//first is modified here
//but that code is omitted
//your code below!




}
```

(b) [10 points] You've been given a list of unique, but catchy pieces of words. For example, maybe "ra", "dab", "ab" and "ca" belong in this list. Your job is to select two words from this list at random. Using these words, you will then create a new phrase that is intended to be a nonsensical English word but that is still something phonetically easy to remember. Given the list above, example returns from the function might be: "rara", "abra", "dabra", or "cadab". We could even call this function twice to get an even longer phrase, but we will leave that for another time. Your job is to implement this function. A simple, sample main is provided.

```
//#includes omitted for brevity

//our function. The argument is a list of word parts,
//Two are selected at random
//The result of their concatenation is the return value
string getCatchyPass(vector<int> word_parts) {









} //end of your getCatchyPass function
int main() {
        srand(0);
   vector<string> word_parts;
   //word_parts is filled from file here
   //that code is omitted
   //below, we call the function you must write
   cout << getCatchyPass(word_parts) << endl;
}
```

Question	Points	Score
1	10	
2	14	
3	20	
Total:	44	