CS 1428
Final

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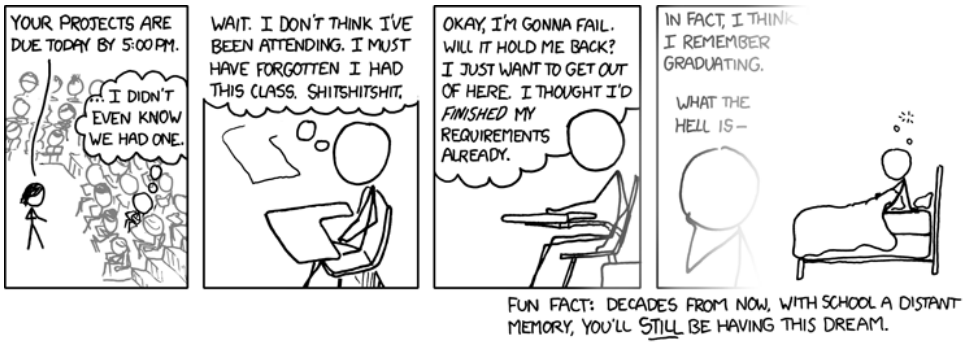
Multiple Choice (2 points each)

1. Which of the following is a valid variable name?
   (a) #myFlyVar
   (b) amount_ordered
   (c) 25lighters
   (d) !0nMyDr3ss3r
2. If I want to use input and output to the screen (console) what library do I need?
   (a) #include <cmath>
   (b) #include <fstream>
   (c) #include <cstdlib>
   (d) #include <iostream>
3. If I want to read in input from a file of indeterminate size, which loop should I use?
   (a) for loop
   (b) while loop
   (c) do while loop
4. What's so special about c-strings?
   (a) They use less memory than regular strings
   (b) They are easier to use than regular strings
   (c) C is for cookie, and that's good enough for me
   (d) They must have a null terminator



Harder Multiple Choice (4 points each)

5. What is the value of **problems** after the following snippet?

```
int problems = 99;
int money = 500;
for (int i = 0; i < 3; i++)
{
   temp = problems;
   problems += money;
   money = temp;
}
```

   (a) Problems = 1297

   (b) Problems = 999

   (c) Problems = 1995

   (d) Screw this crap, this ain't math class

6. What result is returned from this function if random_number = 15?

```
float divide_and_conquer(int random_number)
{
   return random_number / 6;
}
```

   (a) I'd like to use a lifeline

   (b) 2.5

   (c) Purple

   (d) 2

True/False (2 points each)

7. Arrays always pass by default for all intents and purposes

   (a) True

   (b) False

8. When we call a function, we need to provide [] after the variable if it's an array

   (a) True

   (b) False

9. Functions must ALWAYS return a value

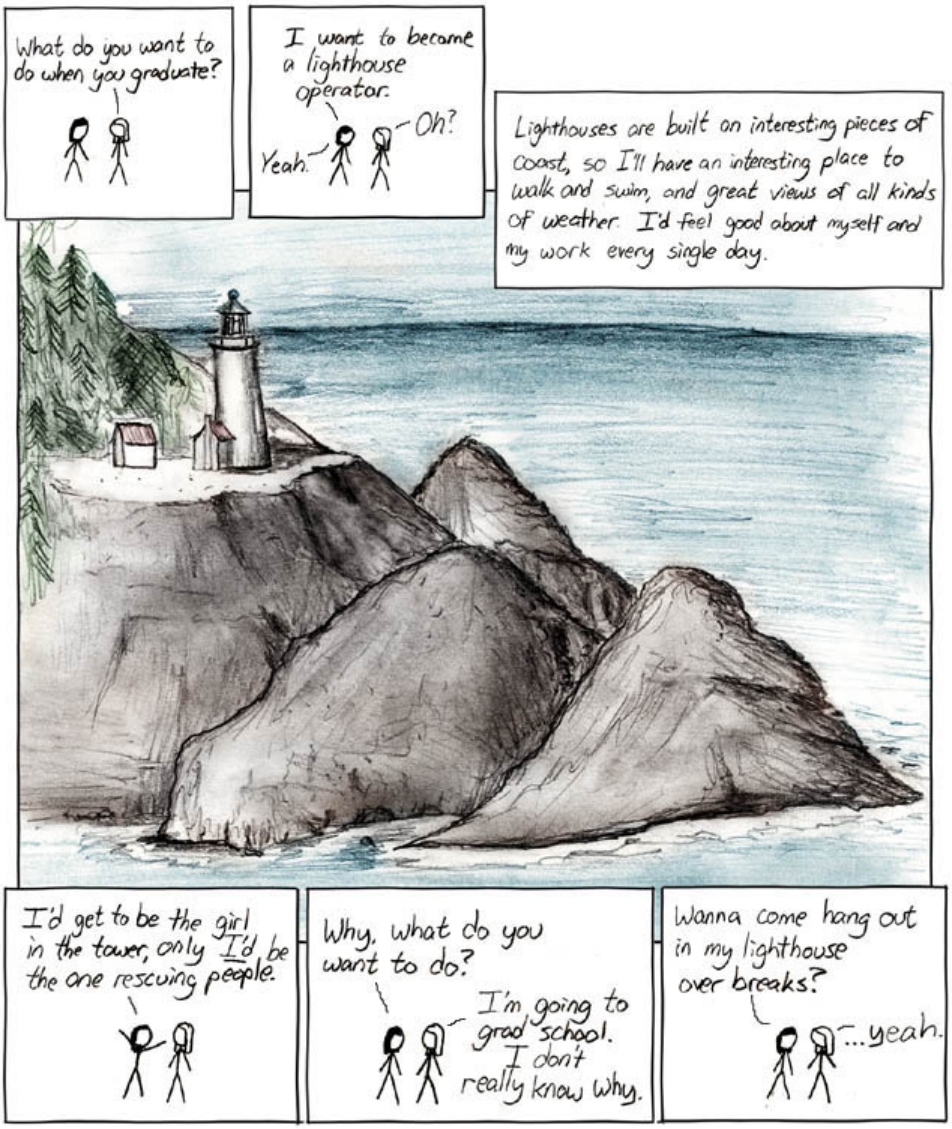
   (a) True

   (b) False

10. Code should never be documented; if it's hard to write, it should be hard to read

    (a) True

    (b) False



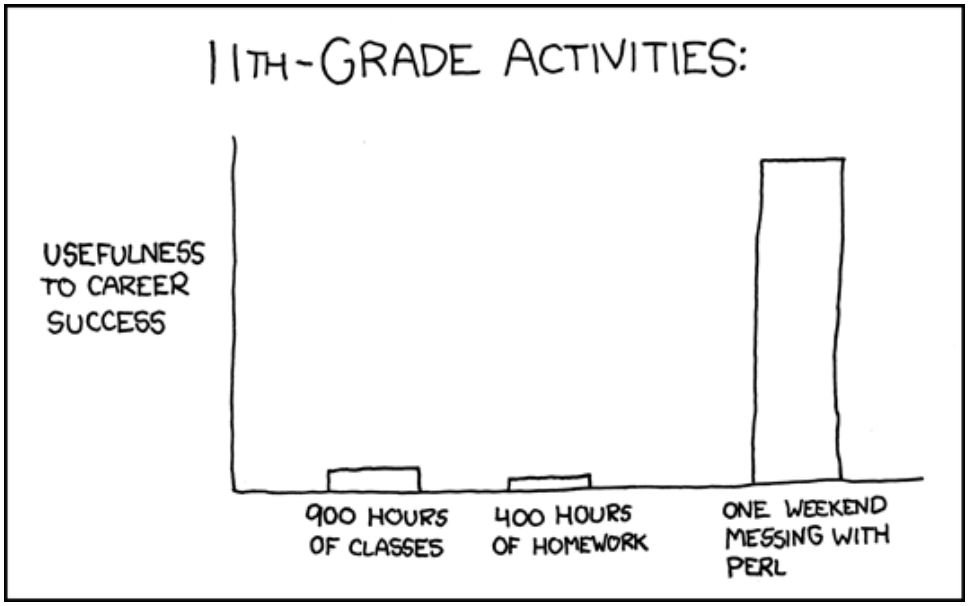
Debugging (points vary)

11. 5 errors, 2 points apiece. Circle and explain all errors. Ignore style issues.

```
void main()
{
   int average,
       sum;
   for (i = 0; i < 10; i++)
      sum += i;
   average = sum/i;
   cout >> "Average is: " >> average;
   return;
}
```

12. 3 errors, 2 points apiece.

```
void populate_array(int [])
int main()
{
   int myArray[20];
   populate_array(myarray[]);
   for (int i = 0; i < 20; i++)
      cout << myArray;
   return 0;
}
```



Code tracing (20 points)

13. What is the exact output of the following C++ code snippet? (You may show your work for partial credit, pay attention to how a variable is passed—its position and whether or not it's pass by reference.)

```
#include<iostream>

using namespace std;

void function1 (int , double);
void function2 (double &a, int &b);

int main()
{
   int x = 7;
   double y = 8.6;

   cout << x << " " << y << endl;
   function1(x, y);
   cout << x << " " << y << endl;
   function2(y, x);
   cout << x << " " << y << endl;

   return 0;
}

void function1 (int x, double y)
{
   cout << x << " " << y << endl;
   x = 0;
   y = 10;
   cout << x << " " << y << endl;
}

void function2 (double &a, int &b)
{
   cout << a << " " << b << endl;
   a = 115.2;
   b = 4;
   cout << a << " " << b << endl;
}
```

Coding (points as marked)

14. Write the C++ code for a void function to print the values in an array to the screen. The array is called MaxValues, it contains 393 doubles, and you may assume it has been properly declared. DO NOT write the entire program, just this function. (10 points)

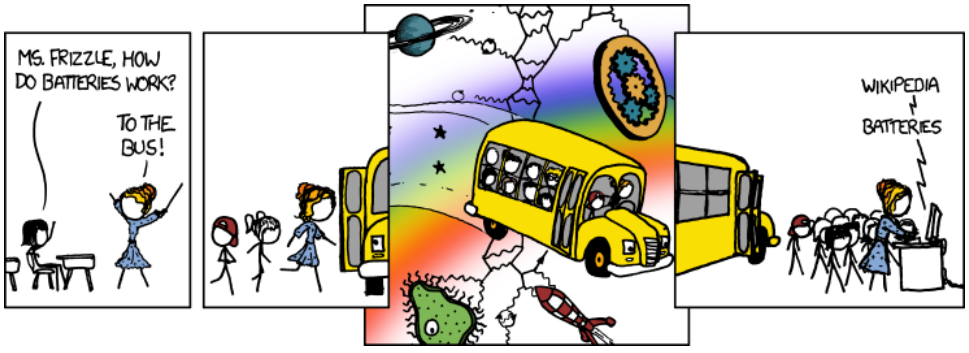
15. Write a structure called EmployeeRecord with the following fields: (10 points)

    ID (array of 5 chars)

    First (array of 10 chars)

    Last (array of 20 chars)

    PayRate (float)



16. Write a short C++ program that conforms to the following specifications: (15 points)

    Read a series of numbers in from a file called "input.txt". These represent final grades for a CS 1428 class.

    Find the lowest and the highest grades and display them to the screen, along with the average grade.

    Hints: This is quite similar to one of your lab assignments. Be sure to use a counter variable to keep track of the quantity of grades. You may choose to use functions if you wish.