

Test 2

Information:

- Thursday 3/28, 11:20-12:20 (I will lecture from 11:00-11:20).
- In class, closed book, closed notes, clean desk
- 10% of your final grade
- 60 minutes to complete it:
- Bring your ID card!
- NO: calculators or cell phones.
- NO: headphones/earbuds.

Test format:

100 points total:

- 12 multiple choice questions (4 points each)
- 2 questions: write a function (PA3), design and implement a class (PA4) (~26 pts ea)

Probably 4 total pages (2 pages front+back)

I'll have extra paper if you need it for writing the functions.

Content:

These lectures:

- Unit 3: Pointers and Dynamic Memory Allocation
- Unit 4: Introduction to Classes
- Multi-file Development (C++ Programming on Linux)

See the lecture slides for the corresponding book sections.

Sample questions:**Multiple choice:**

1. See squarecap questions
2. What is the output given some code?
3. What is the error in the given code?
4. How are pointers used as function parameters?
5. How are classes declared/defined/used?
6. What are the advantages of object-oriented programming
7. What is the scope of various elements in a class?
8. How do constructors and destructors work?
9. How do arrays of objects work?
10. Know definitions of terms like dereferencing, interface, information hiding, encapsulation, object, instance, etc.
11. How should code be split into separate files, and how do you compile them in Linux?
12. What does a given makefile rule mean (how does it work)?

Coding questions:

1. Define a function to find a given target value in an array, but use pointer notation rather than array notation whenever possible.
2. Write a swap function, that swaps the values of two variables in main, but use pointers instead of reference parameters.
3. Write a function that takes an array of ints and its size as arguments. It should create a new array that is the same size as the argument. It should set the values in the new array by adding 10 to each element in the original array. The function should return a pointer to the new array.
4. Write a Circle class that has the following member variables:
 - radius : a double
 - pi : a double initialized with the value 3.14159The class should have the following member functions:
 - Default Constructor. A default constructor that sets radius to 0.0.
 - Constructor. Accepts the radius of the circle as an argument.
 - setRadius. A mutator function for the radius variable.
 - getRadius. An accessor function for the radius variable.
 - getArea. Returns the area of the circle, which is calculated as $\text{area} = \pi * \text{radius} * \text{radius}$
 - getCircumference. Returns the circumference of the circle, which is calculated as $\text{circumference} = 2 * \pi * \text{radius}$