

CPP Module 04

You should evaluate 1 student in this team

Introduction

Please follow the rules below:

- Remain polite, courteous, respectful, and constructive throughout the evaluation process. The well-being of the community depends on it.
- Identify with the student or group whose work is being evaluated the possible dysfunctions in their project. Take the time to discuss and debate the problems that may have been identified.
- You must consider that there might be some differences in how your peers might have understood the project's instructions and the scope of its functionalities. Always keep an open mind and grade them as honestly as possible. The pedagogy is useful only if the peer-evaluation is done seriously.

Guidelines

Please follow the guidelines below:

- Only grade the work that was turned in to the Git repository of the evaluated student or group.
- Double-check that the Git repository belongs to the student(s). Ensure that the project is the one expected. Also, check that 'git clone' is used in an empty folder.
- Check carefully that no malicious aliases were used to fool you into evaluating something that is not the content of the official repository.
- To avoid any surprises and if applicable, review together any scripts used to facilitate the grading (scripts for testing or automation).
- If you have not completed the assignment you are going to evaluate, you must read the entire subject prior to starting the evaluation process.
 - Use the available flags to report an empty repository, a non-functioning program, a Norm error, cheating, and so forth. In these cases, the evaluation process ends and the final grade is 0, or -42 in the case of cheating. However, except for cheating, students are strongly encouraged to review together the work that was turned in, in order to identify any mistakes that shouldn't be repeated in the future.
- Remember that for the duration of the defense, no segfaults or other unexpected, premature, or uncontrolled terminations of the program will be tolerated, else the final grade is 0. Use the appropriate flag.
- You should never have to edit any file except the configuration file if it exists. If you want to edit a file, take the time to explain the reasons with the evaluated student and make sure both of you are okay with this.
- You must also verify the absence of memory leaks. Any memory allocated on the heap must be properly freed before the end of execution.
- You are allowed to use any of the different tools available on the computer, such as leaks, valgrind, or e_fence. In case of memory leaks, tick the appropriate flag.

Attachments

Please download the attachments below:

[subject.pdf](#)

Mandatory Part

Destruction chaining

Destruction chaining

- The destructors in Animal must be virtual. Ask an explanation of what will happen without the virtual keyword over Animal destructor. Test it.

Yes

No

Exercise 00: Polymorphism

As usual, there has to be enough tests to prove the program works as expected. If there isn't, do not grade this exercise. If any non-interface class is not in orthodox canonical class form, do not grade this exercise.

- First check
- There is an Animal class that has one attribute:
- One string called type.
- You must be able to instantiate and use this class.

Yes

No

Prerequisites

The code must compile with c++ and the flags -Wall -Wextra -Werror Don't forget this project has to follow the C++98 standard. Thus, C++11 (and later) functions or containers are NOT expected.

- Any of these means you must not grade the exercise in question:
- A function is implemented in a header file (except for template functions).
- A Makefile compiles without the required flags and/or another compiler than c++.
- Any of these means that you must flag the project with "Forbidden
- Function":
 - Use of a "C" function (*alloc, *printf, free).
 - Use of a function not allowed in the exercise guidelines.
 - Use of "using namespace <ns_name>" or the "friend" keyword.
 - Use of an external library, or features from versions other than C++98.

Yes

No

Exercise 02: Abstract class

As usual, there has to be enough tests to prove the program works as expected. If there isn't, do not grade this exercise. If any non-interface class is not in orthodox canonical class form, do not grade this exercise.

- Abstract class
- There is an Animal class exactly like the one in the subject.
- The Animal::makeSound is a pure virtual function.
- It should look like : virtual void makeSound() const = 0;
- The "= 0" part is mandatory.
- You should not be able to instantiate an Animal.
- Animal test; //should give you a compile error about the class being abstract

Yes

No

Animal

Animal

- Using makeSound() function always called the appropriate makeSound() function. makeSound() should be virtual! Verify it in the code. virtual void makeSound() const;
- The return value is not important but virtual keyword is mandatory.
- There should be an example with a WrongAnimal and WrongCat that don't use the virtual keyword (see subject).
- The WrongCat must output the WrongCat makeSound() only when used as a wrongCat.

Yes

No

Easy derived class

Easy derived class

- The attribute type is set to the appropriate value at creation for every animal. Cat must have "Cat" and Dog must have "Dog".

Yes

No

Concrete Brain

Concrete Brain

- The copy a Cat or a Dog should be a deep copy.
- Test something like:
 - 'Dog basic;
 - {
 - Dog tmp = basic;
 - };
- If the copy is shallow, tmp and basic will use the same Brain and the Brain will get deleted with tmp at the end of the scope.
- The copy constructor should do a deep copy too.
- That's why a clean implementation in orthodox canonical form will save you from hours of pain.

Yes

No

Exercise 01: I do not want to set the world on fire

As usual, there has to be enough tests to prove the program works as expected. If there isn't, do not grade this exercise. If any non-interface class is not in orthodox canonical class form, do not grade this exercise.

- Concrete Animal
- There is a new class called Brain.
- Cat and Dog have the required private Brain attribute.
- The Brain attribute should not be inside the Animal class.
- The Brain class has specific outputs upon creation and deletion.

Yes

No

Assignment and copy

Assignment and copy

- The copy and assignment behaviors of the Cat and Dog are like the subject requires.
- Deep copy means you need to create a new Brain for the Cat or Dog.
- Check that the canonical form is really implemented (i.e. no empty copy assignment operators and so forth). Nothing should be public for no reason. Moreover, this code is very simple so it needs to be clean!

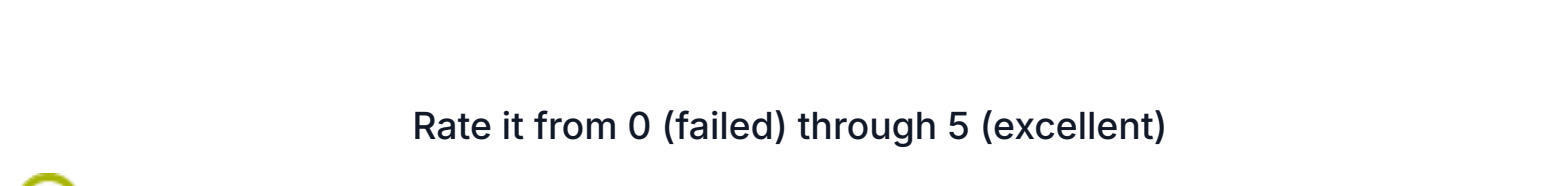
Yes

No

Concrete Materia

Concrete Materia

- There are concrete Ice and Cure classes that inherit from AMateria. Their
- clone() method is correctly implemented. Their outputs are correct.
- The AMateria class is still abstract (clone() is a pure function).
- virtual ~AMateria() is present.
- AMateria contains a protected string attribute to store the type.



Exercise 03: Interface and recap

As usual, there has to be enough tests to prove the program works as expected. If there isn't, do not grade this exercise. If any non-interface class is not in orthodox canonical class form, do not grade this exercise.

- Interfaces
- There are ICharacter and IMateriaSource interfaces that are exactly like required in the subject.

Yes

No

MateriaSource

MateriaSource

- The MateriaSource class is present and implements IMateriaSource. The member functions work as intended.

Yes

No

Inheritance

Inheritance

- They are at least two classes that inherit from Animal: Cat and Dog.
- The constructor and destructor outputs must be clear.
- Ask the student about constructor and destructor orders.

Yes

No

Concrete Animal

Concrete Animal

- Class Cat and Dog are still present and work exactly like in ex01.

Yes

No

Character

Character

- The Character class is present and implements ICharacter. It has an inventory of 4 Materias maximum.
- The member functions are implemented as the subject requires.
- The copy and assignment of a Character are implemented as required (deep copy).

Yes

No

Bonus Part

no bonus

no bonus

- no bonus

Yes

No

Ratings



OK



Outstanding



Empty Work



Incomplete Work



Invalid Compilation



Cheat



Crash



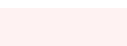
Concerning Situations



Leaks



Forbidden Functions



Cannot Support/Explain code