CCNU-UOW
CSCI851 Advanced Programming
Autumn 2020

Prof. Zhifeng Wang

Laboratory Exercise 7 (Week 7)

Note that lab exercises marked with a * are effectively extension exercises.

1 Task One: Warm–up exercises

Debug `Debug-A.cpp`. The output should be as follows:

```
Given name : Alice
Id. number : 12321
Hat type   : Beret
Hat size   : M
Given name : Bob
Id. number : 2324
Hat type   : Trilby
Hat size   : S
```

2 * Task Two: Efficiency

Look at `Pi.cpp`. It takes an integer argument indicating how many guesses are to be used in determining π. The method used is described at `https://www.youtube.com/watch?v=VJTFfIqO4TU` This is not an efficient way of calculating π, but not is the implementation very good either.

1. Use the chrono time functionality of C++11 to measure the time taken and use the time functionality from Banshee. Both of these are discussed in lecture set `S3e` .
2. Improve it as much as possible without changing the overall method using for calculating π.

3 Task Three: Some short tasks

1. Examine, compile, and run `Cars.cpp`. What is going on?
2. What is happening in `Throw.cpp`? Add a handler in.
3. What happens if we set a destructor to being a deleted function, using `= delete`?
4. * What is an Aggregate class? Write an example of one.
5. * What is a Literal class? Write an example of one.

4 Task Four: Copy Cat Constructor

In last weeks exercises there was a task to write a `Cat` class.

1. If you didn't do this already, you can start from the provided `Cat.cpp` and add a constructor.
2. Add code to show the addresses of the contents of a `Cat` object. This is just to see how the internals are located, relatively.
3. Add a destructor.
4. Add a copy constructor. Think of it as cloning.
5. Add a copy assignment operator.
6. Extend the main function to demonstrate the use of the class and the new operators.
7. * Can you output addresses for the functions?