CPSC 327

Project 4

References:

1. Building and linking to a Static Library lectures and projects
2. Pointers Memory lectures and projects
3. Classes, Objects lectures and projects

Sample Code:
See 2 starter projects on course website projects folder

Topics covered by this project;

- Creating and using a static library
- Using pointers to manipulate objects
- Using vectors to hold objects and pointers
- Class Heiarchies
- Abstract Base Classes
- Polymorphism
- Composition

Class Heiarchy
You are developing a class heiarchy for this project. An Abstract Base Class (ABC), 'Smalltalk' defines the heiarchy behaviour.
Classes derived from Smalltalk must implement populatePhrases(). A function that initializes the baseclass vector with phrases that are unique to that class type. For instance, Smalltalk_American will populate the vector with the american phrases found in constants.h.

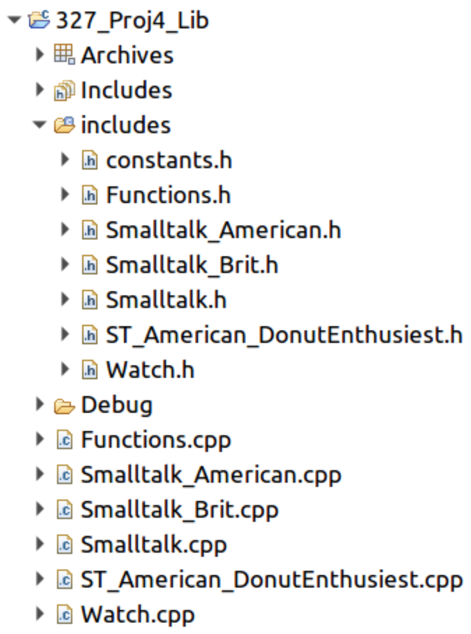
Additionally you are given a complete watch object. You may give or take a watch from any instance of Smalltalk_American, ST_American_DonutEnthusiest or Smalltalk_Brit. Note that watches cannot be created out of thin air, if you give one to an instance you no longer have that watch, the instance does. Because of that fact, this is one case where a shallow pointer copy is appropriate. See Smalltalk.h for further guidance.

Please also provide a function (as specifies in Functions.h and outlined in Functions.cpp) that generates a vector of unique pointers. Please pay attention to the hints I've left you in the implementation.

Please compile both projects using the C++11 language standard.

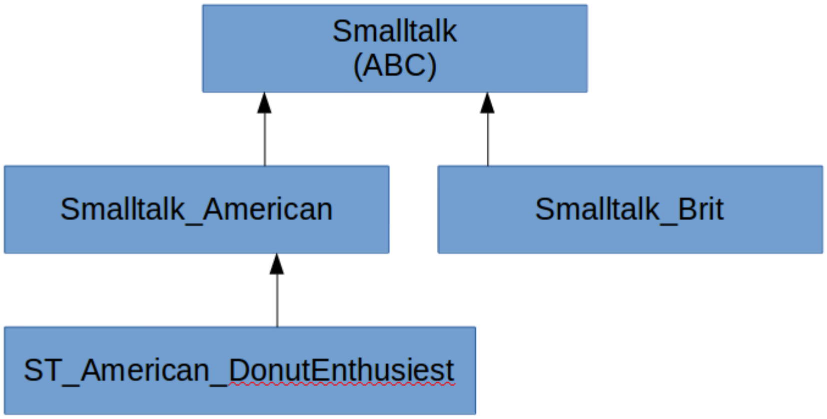
Library

I would like you to develop a static library with the following name and file structure.



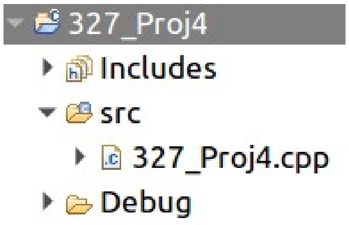
```
327_Proj4_Lib
  Archives
  Includes
  includes
    constants.h
    Functions.h
    Smalltalk_American.h
    Smalltalk_Brit.h
    Smalltalk.h
    ST_American_DonutEnthusiest.h
    Watch.h
  Debug
  Functions.cpp
  Smalltalk_American.cpp
  Smalltalk_Brit.cpp
  Smalltalk.cpp
  ST_American_DonutEnthusiest.cpp
  Watch.cpp
```

All classes inherit publicly. The class hierarchy is as follows;



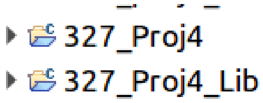
I have given you the header files and some of the implementation.

Testing
Please develop a test application that has the following name and file structure:



```
327_Proj4
    Includes
    src
        327_Proj4.cpp
    Debug
```

This application should link statically to the above library. The projects as they appear in the eclipse workspace.



```
327_Proj4
327_Proj4_Lib
```

Please be sure to test your library throughly. I will use my own test harness.

To Turn In
327_Proj4.cpp
Functions.cpp
Smalltalk_American.cpp
Smalltalk_Brit.cpp
Smalltalk.cpp
ST_American_DonutEnthusiest.cpp