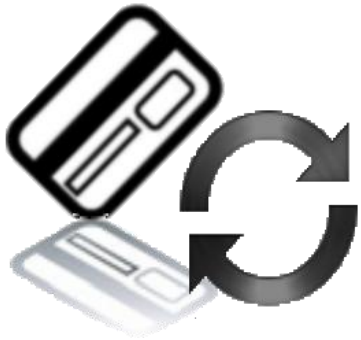
CS3215 – Software Engineering Project



CLAIM SHEET

Team 12

17 April 2010

1. Accomplishment

- A quality product with not only basic features (basic sync: one way/two way) but also unique features: Right-click features (Smart Sync, Sync With), multiple jobs sync, drag-and-drop sync, IVLE Sync, many more minor features.
- A fault-tolerant, user-oriented, intuitive, simple, convenient, fewer-step GUI.
- Sync large files in a reasonable amount of time.
- A portable software without window installation.
- Extensible system design for future expansion and development. (The Logic can be built into .dll file to be used for different GUI and Storage, etc)

2. Applied techniques from CS2103/CS3215 Lectures

- Separation of concerns principle: to design loose coupling and cohesive components. GUI, Logic and Storage can be implemented in parallel.
- Design patterns
  - MVC Pattern + Multilayer Architecture: GUI, Logic, Storage
  - Singleton Pattern: Storage
  - Façade Pattern: GUI → LogicFacade → Logic → StorageFacade → Storage
  - Observer Pattern: Logic notifies GUI whenever necessary
- Design approach: Design by contract + top down design
- Implementation:
  - Inheritance and Polymorphism
  - Substitutability principle
  - Aggressive refactoring
- Testing:
  - Exploratory Testing
  - Unit Testing + Integrated Testing + Regression Testing (using NUnit)
  - Test case design: grey box, equivalence partitioning, code-coverage
- Project management:
  - Process model: Spiral
  - Work breakdown structure

3. Apply programming techniques:

- Multithreading
- Inter-process communication
- Context Menu Handler (right-click feature)

- Web Programming (IVLE)
- Windows Presentation Foundation (design GUI)

4. Challenges during project

- *Problem:* Time constraint and pressure - team members had to deal wit pressure this module as well as other modules.

  Solve: Team member had to pay extra efforts to fulfil the tasks. Sometimes we needed to work overnight to meet the time constraint.

- *Problem:* kita for the proposal. Quite a disappointment and discouragement.

  Solve: Learnt from "failure"– worked harder for the rest of the project. In the end, our effort was paid off with NETS ☺

- *Problem*: Team lacked GUI design experience. Our WPF GUI was not finished in time for the release of version 2.0.

  Solve: team decided to focus on developing more unique features instead of trying to design as flashy GUI as the selling point.

- *Problem:* Task division: most members wanted to do a same task (coding).

  Solve: two members was chosen to be main coders, and others was assigned different tasks (testing, writing documentation, etc)

- *Problem:* different ideas and preference conflicts between different members

  Solve: Analyze plus and minus points of each preferences to come up with the final decision.

  …. and as many other problems as a coding team project may face ☺

5. Lessons and experience learned

- Teamwork: Team bonding, team spirit and enthusiasm are factors of great importance to lead to success.
- Project Planning and Management:
  - A good plan and timing facilitates the later work of the project.
  - Time management: good time management leads to less stress and better productivity.
  - Meeting management:

        - have regular (weekly) team meeting sessions helps team members keep better track with the project, rather than rushing to meet only before the deadline to do all the work.
        - Meeting plan: have specific plan for each meeting (what is to be discuss, what needs to be done after this meeting) helps improving productivity of the meeting session.
        - Extra meeting sessions needed in emergent situations (e.g. new bugs detected just before deadline, etc.)
    - Toward-the-end task: All members in the team should focus on developing and polishing the software instead of trying to explore new things.
- Consultation from project advisors: is needed and is an important factor, helps the project progresses smoothly.
- Other lessons:
    - Spend more time on documentation besides coding and testing.
    - You can never build a bug-free software.

6. Usage of new tools

- Visual Studio Team System 2008
    - Debugger
    - Refactor tool
    - Code metric calculator
    - NUnit Framework for Testing
    - Profiler
    - Ankh SVN
- Tortoise SVN
- Resharper
- DotTrace
- File Bot + FolderDiff
- DreamWeaver + Microsoft Expression Web + Photoshop CS4 to design Web

7. Ebook and resources

- Resources provided by CS3215 Teaching Team
- Design Patterns: Elements of Reusable Object-Oriented Software (Gang of Four)
- Threading in C# (Joseph Albahari)
- C# 2008 (Wei-Meng Lee)
- Programmer Heaven C# School (Faraz Rasheed)
- Creating Context Menu Handlers: http://msdn.microsoft.com/en-us/library/cc144171%28VS.85%29.aspx