

The Non-Profit FOSS Institute (NPFI)

Supporting HFOSS Learning Projects

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Client-Oriented FOSS (CO-FOSS)

is an HFOSS learning project where:

- The software is customized for a single client
- The project is embedded in a 1- or 2-semester software development course
- **The faculty member and client develop requirements before the course begins**
- The student team develops the software during the course
- The client provides feedback during weekly team meetings
- The software is completed by the end of the course
- **The software is deployed on the client's server and professionally supported thereafter**

NPFI Origins

2008: First CO-FOSS course at Bowdoin

Client: Ronald McDonald House in Portland, ME

Project: [Homebase](#) – A volunteer scheduler

Student team: 4 senior CS majors

Lessons learned:

- It's a lot of extra work to create a new project (2 months)
- Ongoing client support needs a professional developer.

Challenges:

1. Creating a new project requires *extra faculty support*
2. Finding a professional developer is *difficult*.

NPFI Origins (continued)

Later CO-FOSS projects faced the same challenges:

- 2011: [Homeroom](#) (2 students)
- 2012: [Homeplate](#) (3), [Homecheck](#) (3), and Homebase v2 (3)
- 2013: Homeroom v2 (4), Homebase v3 (4), MCHP-Homeplate (4), MCHP-Homebase (4)
- 2015: [BMAC-Warehouse](#) (5 students) and [RMHP-Homebase](#) (4 students)

To meet these challenges, [NPFI](#) was formed in 2013:

1. Provides teaching materials, [faculty grants](#), and other support for new CO-FOSS projects
2. Provides developer support for completed projects

A CO-FOSS Case Study: Homeplate

Conceived in fall 2011

- Client: [Second Helpings](#), a food distribution non-profit in South Carolina
- Application: a web-based tool for truck drivers to record weights on an Android tablet of food picked up and delivered to recipients
- Current system: weights recorded on clipboards and entered into a spreadsheet for manual tabulation and reporting. Tedious and error-prone.

Developed in spring and summer 2012 by:

- a 3-student team in a 1-semester course, and
- a 1-student summer internship.

Homeplate Case Study (cont'd)

Installed and running on client's server since 2012

Professional Developer support:

2012-2017: [Progressive Technology, Inc.](#)

- Fee-for-service bug fixing and new features

2017-present: [NPFI](#)

- Pro bono bug fixing and new features

Usage: deployed daily on 12 Android tablets and 7 trucks.

Support materials: Source code, issue tracking, sandbox setup, design document, and other materials on [GitHub](#)

“Live” version: <http://homeplate.secondhelpingslc.org>

New CO-FOSS Project: Instructor Tasks

1. Finding a suitable non-profit and a project

- Evaluate and pick a client
- Identify a software need
- Identify a person who will collaborate
- Define requirements and choose FOSS license

2. Wrapping a course around the project

- Form student team(s)
- Select tools and technologies
- Establish initial code base (think aggressively about FOSS code reuse)
- Set milestones for collaboration with the client
- Build the syllabus

New Project Instructor Tasks (cont'd)

3. (oh, yes) Teaching the course

- Mini-lectures
- Scheduling meet-ups with client
- Role on the team – benign dictator
- Evaluating student work

4. Deploying the product

- Finding a professional developer
- Handing off the code and its database
- Posting the code and resources on GitHub, Bitbucket, SF, etc.
- (Evolving into a larger HFOSS project)

How NPFI Supports Instructors

- Project descriptions
- Source code
- Sandbox installations and demo sites
(Homepage, Homeplate, Homeroom, and BMAC-Warehouse)
- Teaching materials
- Instructor grants
- Individual consultation

See <https://npfi.org> for details on all of these.

Applying for an NPFI Grant

- Amount is \$5k to support an instructor preparing a new CO-FOSS project course
- The software should be FOSS and the client is normally a single non-profit organization
- The professional developer need not be identified prior to applying
- Reviewing is swift
- 1-2 grants are awarded per year
- For details, see <https://npfi.org/npfi-grants/>

Additional NPFI Project Support

Source [repositories](#) on GitHub (code reuse works!)

Homebase (2008-2013) → RMHP-Homebase (2015)

Homeplate (2012) → BMAC-Warehouse (2015)

Syllabi and other instructor [resources](#) (downloadable)

Design documents, grading rubrics, handouts, mini-lectures, assignments, sandbox installations

Our new textbook *Open Source Software Development: The CO-FOSS Approach*, to appear June 2019.

A detailed roadmap for CO-FOSS project conception, design, course design, teaching, and deployment.

Download TOC, Preface, and sample chapters [here](#).

Questions? Comments?