Squirrel Works Creative Inquiry, Fall 2010

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Project Description

One of the most innovative and efficient R&D organizations ever devised was the Los Angeles Development Center of Lockheed Aircraft Corporation – better known as the “Skunk Works.” The Skunk Works developed stealth technology (U-2, SR-71, and F-117) but also had an enviable record of cost containment and reputation for the fast development of the highest quality products, yet was a great place to work. The name “Skunk Works” is copyrighted, so we can't use it --- so we chose “Squirrel Works” in honor of all the squirrels on campus.

The creative inquiry project is not to build airplanes but to develop high-quality, open source tools with the Skunk Works philosophy. Active students will have real responsibilities while participating in a real company developing a real product. Students will gain experience in software development but also in project management, marketing, team leadership, and open source software systems. Squirrel Works products will be open source under a yet to be determined open source license and available on multiple platforms.

Product Description

The Fall, 2010 project is to develop a visual programming language based on a well-known engineering paradigm known as dynamical systems. The computer science “flowchart” is a type of dynamical system. We will be using a Javascript package called WireIt. The students will also learn agile development methods highly used in industry.

Team Organization

Students would constitute an open source software development shop with project management, marketing, and software development responsibilities. The creative inquiry stipend will be used to fund the project, primarily marketing costs.

Portfolio Activities

Creative inquiry projects are required to support ePortfolios; past experiences with employers shows that the develop of a more complete, professional portfolio is invaluable in job hunting.

ePortfolios assume that the portfolio will contain diverse examples of files that cover such activities as writing samples, evidence of creativity, and self-evaluations. Since the students will be active in a workplace, we expect to evaluate them on modified workplace criteria. Software development requires development plans, software documentation, user tutorials, and – of course – code. System development will require use of “literate programming” techniques that use the LaTeX documentation system (standard tool in STEM literature preparation). There are many open source products available and desirable for the overall project that require written evaluations and decisions. The students will be
Learning Objectives

1. Solving interdisciplinary computational science problems and algorithms;
2. Writing software specification;
3. Developing and testing of large computer systems;
4. Using professional software engineering techniques;
5. Developing visualization tools;
6. Dealing with open-source development on at least three platforms (Linux, Mac OS, PC);
7. Evaluating of team members;
8. Participating in project management;

Student Credit

Active students will be enrolled in the new “creative inquiry” courses in the Department of Computer Science. The current credit options are

1. Computer Science CP SC 281 for one or two credits.
2. Computer Science CP SC 481 for three credits.
3. Honors students may take CP SC H481.

Students can expect the same load as any other course: two hours of work per hour in class.

Enrollment

Interested students must contact Dr. Stevenson or Dr. Weaver. Dr. Stevenson is at 315 McAdams Hall, telephone 656-5880. Email preferred: steve@cs.clemson.edu.