Runestone Introduction

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Informationsteknologi

Presentation Outline

- Learning Goals
- Instructional method
- Project overview
  - Technical
  - Development timeline
  - Grading
  - Administrative details
- Expectations
  - Milestones and Reports
  - Final presentations

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Utbildningsmål

- visa förmåga att skapa, analysera och kritiskt utvärdera olika tekniska lösningar
- visa förmåga att med helhetssyn kritiskt, självständigt och kreativt identifiera, formulera och hantera komplexa frågeställningar samt att delta i forsknings- och utvecklingsarbete och därigenom bidra till kunskapsutvecklingen
- visa förmåga till lagarbete och samverkan i grupper med olika sammansättning, och visa förmåga att i såväl nationella som internationella sammanhang muntligt och skriftligt i dialog med olika grupper klart redogöra för och diskutera sina slutsatser och den kunskap och de argument som ligger till grund för dessa.
- visa förmåga att identifiera sitt behov av ytterligare kunskap och att fortlöpande utveckla sin kompetens

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Kursmål

Efter godkänd kurs skall studenten kunna:

- planera och genomföra utveckling av ett distribuerat system med deltagare från olika kulturer och med olika tekniska kompetenser.
- resonera kring för- och nackdelar med centrala principer, begrepp och algoritmer inom distribuerade system.
- aktivt visa ett kritiskt förhållningssätt och förmåga att hantera öppna problem och fatta konstruktionsbeslut under utveckling av ett distribuerat system.
- hantera samarbetsproblem såsom personliga konflikter, kulturella skillnader.
- relatera och redovisa framsteg i förhållande till en tidsplan för ett projektet (t ex. Gantt chart).

Project Aims

- Integrate existing knowledge and skills
- Develop skills in independent project related research and knowledge acquisition.
- Extend your competence in
  - project management
  - virtual teamwork for s/w development
  - inter-cultural and inter-disciplinary teamwork
- Experience a full development cycle from conception to delivery for a small scale system
- Provide opportunities to develop your professional skills through mentorship in an educational setting

Project Method

- Project structure
  - A large part of the project concerns requirements elicitation and research and design of the system.
  - There is no single correct answer, each team is expected to develop a requirements specification and design in collaboration with the other members of the team and the team mentor.
  - Creativity and capacity to identify and synthesise relevant knowledge and apply it to the problem are vital aspects of obtaining a pass grade.
- Teamwork
  - Each development team consists of students from Uppsala and one remote site
  - Each team will have regular online meetings with a designated mentor at one of the Universities participating in the project

Collaborating Sites

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- Uppsala University, Sweden
- Hanoi University of Sci. and Tech.

} Current participants

past

- Rose-Hulman, Indianna, USA
- Turku University of Tech.,Finland
- Tongji University, China
- Grand Valley State University, Michigan, USA

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Technical Task

- Design a distributed system which coordinates online and autonomous control of a robot over the Internet.
  - Robot operates autonomously, and in collaboration with other robots, to place goods in a storage area.
  - Server communicates with one or more robots and a sensor network consisting of Arduino units with light and temperature sensors. The server also provides real-time video and command relay between the robot and a remote Control Client
  - Client displays a representation of the area being navigated and real-time video from the robot environment. The client GUI provides controls to allow a user to prioritise storage operations to user specified areas of the remote environment.

System Requirements

- Teams should develop a system that meets the basic specification stated on the previous slide.
- In addition to satisfying the basic system requirements each team should address in their design.
  - ability of the system to meet storage requirements in terms of light and temperature, as well as user preferences received through the GUI.
  - robustness and ease of installation of the final system should be addressed during development.

Project Calendar

- Project phases are divided into weeks of work. Weeks refer to week numbers relative to the start of the study period.
  - Week 1 - Kickoff, redmine config and team allocation
  - Week 3 - implementation planning
    - Milestone 1 - planning report
  - Week 4 - Requirements analysis and design
  - Week 5 - implementation
    - Milestone 2 - progress report
  - Week 6 - implementation
    - Milestone 3 - progress report
  - Week 7 - implementation
    - Milestone 4 - progress report
  - Week 8 - finalise project and presentation
- Final presentations, May 20

Passing the course

Runestone (1DT092) is examined by continuous assessment. To pass the course you need to compile a personal online "portfolio" on the project management Redmine site. Your portfolio should provide convincing evidence that you have,

- made a continuous contribution to achieving the project learning goals, and
- participated actively in team activities and meetings, and
- contributed productively to compiling knowledge for the use of the team, and writing reports and making online, and face to face presentations.

Grading Scheme

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20% [2hp] Projektledning och kommunikation (milestones)
Project management and professional communication (milestones)
Grade scale: U/G

30% [3hp] Systemdesign och utveckling
System design and development (System design and implementation)
Uppsala grading range: 3, 4, 5

40% [4hp] Professionella färdigheter
Professional skills (time logs, reflections, participation in meetings, peer evaluation)
Uppsala grading range: 3, 4, 5

10% [1hp] Slutpresentation
Final presentation
Uppsala grading range: 3, 4, 5

Slutbetyget krävs godkänd i alla moment är en sammanvägning av 0200, 0300, och 0400

Development Server

- Uppsala University provides access to a
  - Redmine project management system
    - course information
    - communication forums
    - team websites
    - project calendar
    - project planning and management tools
    - SVN repository

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Administration

- Account creation on http://runestone.it.uu.se
  - To register yourself as a user,
    - Click on “Register” in upper RH corner
    - create a username FirstnameInitial (e.g. ArnoldP)
    - pick a password
- Project room available next week, access with your card.
  - Project room available for the course duration
  - Final presentations by video conference (venue TBA)
- Network access
  - normal access via UpUnet-S wireless, and IT Inst. wired network

Setup Summary

- Everyone taking the course should
  - Register yourselves on the Redmine site.
  - Fill in a team allocation form
    - In this form you are asked for your
      - Fixed ethernet port MAC address for laptops wishing to connect to the DMZ
  - The teams can sign out a LEGO NXT kit and Arduino boards in week 2.
  - Arduino boards will be available at the same time.

Milestones and Reports

- All meetings are held using IRC chat and uploaded to your Redmine project wiki after meetings
- Document progress both of the group and through your own portfolio.
- Provide realistic status information so staff can help the team
- Hints
  - Follow the reporting guidelines
  - Material needs to be online at least one day before the meeting