Advanced programm development environments - course description

General information

Course name	Advanced programm development environments
Course ID	11.3-WE-INFP-APDE-Er
Faculty	Faculty of Computer Science, Electrical Engineering and Automatics
Field of study	Computer Science
Education profile	academic
Level of studies	First-cycle Erasmus programme
Beginning semester	winter term 2019/2020

Course information

Semester	6
ECTS credits to win	4
Course type	optional
Teaching language	english
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Classes forms

The class form	Hours per semester (full-time)	Hours per week (full-time)	Hours per semester (part-time)	Hours per week (part-time)	Form of assignment
Lecture	30	2	-	-	Exam
Laboratory	30	2	-	-	Credit with grade
Project	15	1	-	-	Credit with grade

Aim of the course

• Familiarize students with basic information about RAD (rapid application development) environments, shows advantages of RAD environment e.g. Delphi, C++ Builder.

• Showcase the possibilities of creating so-called "desktop" applications and database application where SQL based server is used, provide basic information about the visual component library (VCL) structure, outline DLL and COM technologies.

• Learning of basic competences and skills in developing web applications using WebSnap technology and also multi-tier applications, overview of ASP and ASO technologies (Active Server Pages, Active Server Objects), presentation of CORBA technology in Delphi and/or C++ Builder.

Prerequisites

Fundamentals principle of programming, Object-oriented programming.

Scope

Application programming for MS Windows systems. History of RAD tools (Rapid Application Development) -- Delphi, C ++ Builder, Kylix. Object Pascal and C++ languages. Introduction to DELPHI programming environment. Projects, modules, and forms. Use debugger. Handling of exceptions. Event-based programming. Creating DLLs. Processing of Windows messages. Multithreaded applications.

Creation of database applications. Introduction to BDE ((Borland Database Engine). Basic components for database handling. Operations on database sets (searching, navigation, filtering, etc.). SQL support by TQuery component. dbExpress technology. Making of database application with dbGo for ADO. Raport design, Introduction do InterBase server.

Construction and design of components. VCL and CLX component architectures. Creating of VCL components. Cross Platform Components. Programming Windows shell extensions. COM Basics (Component Object Model). COM technology and Delphi.

Internet application. Internet application and Delphi. Introduction to WebSnap technologu. Design of server application using WebSnap. XML in Delphi. MIDDAS -- creation of multitier applications. Example of DataSnap architecture. Making of DataSnap applications. Introduction to ASP (Active Server Pages), ASO (Active Server Objects). Introduction to CORBA architecture. IDL language. Example of CORBA applications.

Teaching methods

Lecture: conventional lecture
Laboratory: laboratory exercises, group work
Project: project method, discussions and presentations

Learning outcomes and methods of theirs verification

Outcome description	Outcome symbols	Methods of verification	The class form
Student knows the basics of handling and constructing DLLs and COMs libraries and objects.		• a test with score scale	• Lecture

Outcome description	Outcome symbols	Methods of verification	The class form
Student has a basic ability to build visual or non-visual components.		• a test with score scale • an observation and evaluation of activities during the classes	• Laboratory
Student is able to develop and implement a desktop or client-server database applications.		• a test with score scale • an observation and evaluation of activities during the classes	• Laboratory
Student knows history of RAD tools, as well as the current RAD drawbacks and advantages.		• a test with score scale	• Lecture
Student is able to work individually and collectively (in a team).		• a test with score scale • an observation and evaluation of activities during the classes	• Laboratory • Project
Can construct basic multi-tier applications and CORBA based applications.		• a test with score scale • an observation and evaluation of activities during the classes	• Laboratory • Project
Can use MS Windows message system.		• a test with score scale • an observation and evaluation of activities during the classes	• Laboratory
Can design and construct graphical user interface using RAD tools.		• a test with score scale • an observation and evaluation of activities during the classes	• Laboratory

Assignment conditions

Lecture - obtaining a positive grade in written exam.

Laboratory - the main condition to get a pass are sufficient marks for all exercises and tests conducted during the semester.

Project - a condition of pass is to obtain positive marks from all project tasks and preparation written report of project.

Calculation of the final grade: = lecture 30% + laboratory 30% + project 40%.

Recommended reading

1. Pacheco X., Teixeira S.: Delphi 6. Developer's Guide, Sams Pub, 2002
2. Cantu M.: Mastering Delphi 7, Sybex 2003

Further reading

1. Cantu M.: Delphi XE Handbook: A Guide to New Features in Delphi XE, CreateSpace Independent Publishing Platform, 2011
2. Rolliston C.: Delphi XE2 Foundations, CreateSpace Independent Publishing Platform, 2012

Notes

Modified by prof. dr hab. inż. Andrzej Obuchowicz (last modification: 27-10-2019 09:24)