
ITASDI PROJECT

Innovative Teaching Approaches in development of Software Designed Instrumentation and its application in real-time systems

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Course "Advanced LabVIEW Applications"

Syllabus

Leader Partner: ¹Warsaw University of Technology

Contributions: ²School of Electrical Engineering, University of Belgrade,
Zagreb University of Applied Sciences

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1 Topics

The Advanced LabVIEW Applications course was prepared and introduced as elective subject in Applied Physics and Photonics courses of study.

Ten different practical laboratory exercises were created:

- 1 Sequential state machine,
- 2 Master/Slave Design Pattern,
- 3 Producer/Consumer Design Pattern,
- 4 Producer/Consumer User Event Design Pattern,
- 5 Queued Message Handler,
- 6-7 User Interface,
- 8 Documentation, managing and logging errors,
- 9 Timing,
- 10 Student's project.

For all laboratory exercises, the educational materials (lecture in form of slides, instruction for students, initial software in LabVIEW for students and solutions for instructors) were prepared separately. The course is focused on practical part of using advanced knowledge and techniques on software preparation in LabVIEW language. This kind of course is probably the first one in Poland. All materials were prepared in English language, so everyone can use it to learn advanced topics in LabVIEW.

2 Educational resources

The list of educational resources:

- 1 Sequential state machine,
 - lecture in form of slides -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab1/Lab1_slides.pdf
http://itasdi.uns.ac.rs/pluginfile.php/2263/mod_resource/content/1/Lab1_slides.pdf
 - instruction for students -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab1/Laboratory1f.pdf
http://itasdi.uns.ac.rs/pluginfile.php/2261/mod_resource/content/1/Laboratory1f.pdf
 - softwares in LabVIEW -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab1/Public-Lab1.zip
<http://itasdi.uns.ac.rs/mod/resource/view.php?id=255>
- 2 Master/Slave Design Pattern,
 - lecture in form of slides -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab2/Lab2_slides.pdf
http://itasdi.uns.ac.rs/pluginfile.php/2266/mod_resource/content/1/Lab2_slides.pdf



- instruction for students -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab2/Laboratory2final.pdf
http://itasdi.uns.ac.rs/pluginfile.php/2264/mod_resource/content/1/Laboratory2final.pdf
 - softwares in LabVIEW -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab2/Public-Lab2.zip
<http://itasdi.uns.ac.rs/mod/resource/view.php?id=258>
- 3 Producer/Consumer Design Pattern,
- lecture in form of slides -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab3/Lab3_slides.pdf
http://itasdi.uns.ac.rs/pluginfile.php/2269/mod_resource/content/1/Lab3_slides.pdf
 - instruction for students -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab3/Laboratory3f.pdf
http://itasdi.uns.ac.rs/pluginfile.php/2267/mod_resource/content/1/Laboratory3f.pdf
 - softwares in LabVIEW -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab3/Public-Lab3.zip
<http://itasdi.uns.ac.rs/mod/resource/view.php?id=261>
- 4 Producer/Consumer User Event Design Pattern,
- lecture in form of slides -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab4/Lab4_slides.pdf
http://itasdi.uns.ac.rs/pluginfile.php/2272/mod_resource/content/1/Lab4_slides.pdf
 - instruction for students -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab4/Laboratory4f.pdf
http://itasdi.uns.ac.rs/pluginfile.php/2270/mod_resource/content/1/Laboratory4f.pdf
 - softwares in LabVIEW -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab4/Public-Lab4.zip
<http://itasdi.uns.ac.rs/mod/resource/view.php?id=264>
- 5 Queued Message Handler,
- lecture in form of slides -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab5/Lab5_slides.pdf
http://itasdi.uns.ac.rs/pluginfile.php/2275/mod_resource/content/1/Lab5_slides.pdf
 - instruction for students -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab5/Laboratory5f.pdf
http://itasdi.uns.ac.rs/pluginfile.php/2273/mod_resource/content/1/Laboratory5f.pdf
 - softwares in LabVIEW -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab5/front_panel_labview13.zip
<http://itasdi.uns.ac.rs/mod/resource/view.php?id=267>



6-7 User Interface,

- lecture in form of slides -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab6/Lab6_7_slides.pdf
http://itasdi.uns.ac.rs/pluginfile.php/2278/mod_resource/content/1/Lab6_7_slides.pdf
- instruction for students -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab6/Laboratory6.pdf
http://itasdi.uns.ac.rs/pluginfile.php/2276/mod_resource/content/1/Laboratory6.pdf
- softwares in LabVIEW -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab6/Public-Lab6.tar.gz
<http://itasdi.uns.ac.rs/mod/resource/view.php?id=270>

8 Documentation, managing and logging errors,

- lecture in form of slides -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab8/Lab8_slides.pdf
http://itasdi.uns.ac.rs/pluginfile.php/2281/mod_resource/content/1/Lab8_slides.pdf
- instruction for students -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab8/Laboratory8f.pdf#page=1&zoom=auto,-23,842
http://itasdi.uns.ac.rs/pluginfile.php/2279/mod_resource/content/1/Laboratory8f.pdf
- softwares in LabVIEW -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab8/Public_LabVIEW13.zip
<http://itasdi.uns.ac.rs/mod/resource/view.php?id=273>

9 Timing,

- instruction for students -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab9/Laboratory9f.pdf
http://itasdi.uns.ac.rs/pluginfile.php/2282/mod_resource/content/1/Laboratory9f.pdf
- softwares in LabVIEW -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Lab9/front_panel_public.zip
<http://itasdi.uns.ac.rs/mod/resource/view.php?id=276>

10 Student's project.

- instruction for students -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Project/Laboratory10f.pdf
http://itasdi.uns.ac.rs/pluginfile.php/2284/mod_resource/content/1/Laboratory10f.pdf
- softwares in LabVIEW -
http://fizyka.if.pw.edu.pl/%7Elabe/data/_uploaded/file/aal/Project/front_panel.zip
<http://itasdi.uns.ac.rs/mod/resource/view.php?id=278>