**CITB621 Проект: Графично програмиране**

**3D Scene made with openFrameworks**

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**Описание на проект**

**openFrameworks is an [open source](https://openframeworks.cc/about/license/) C++ toolkit designed to assist the creative process by providing a simple and intuitive framework for experimentation.**

**Addons are located in the addons folder in your OF installation. When you download OF you will already find several core addons there. Move your own addons.**

**This project consists of a 3D interactive scene using openFramworks.**

**4 OBJ models are loaded (an astro boy, a dwarf, a walking alien and a falling alien). Each of the models has it’s own set of animations which are played when the user clicks the ‘space’ button or uses the mouse’s left button and drags the mouse of the y-axis. Then he can witness more in detail each animation frame of the model.**

**There is helpful text in the scene which offers information to the user like the current fps of the scene, the number of animation sets in each model and the controls with which the user can toggle or play through the animations.**

**The project consists of 3 files which are main.cpp (the main entry point for the program), ofMain.h where all the functions and variables are defined and ofMain.cpp where they are implemented.**

**Every openFrameworks program consists of three main components which are: setup(), update() and draw().**

**ofApp::setup() – this is the section where the initial setup of the scene is done like background color, loading and reading models, texture coordinates, initialization of variables, playing animations and setting coordinates in the scene like the location of the model that we are displaying.**

**void ofApp::update() –**  **The update() function is called on every frame (e.g. 30 times or 60 times per second typically). Here the updating of animations and calculations are made.**

**void ofApp::draw() – most of the work is done in this function. Here we I set up the shading model, blend mode and the lighting in the scene. In the project scene I use specular lighting. With the help of ofPushMatrix() I am storing the current coordinates of the models so I can perform animations on them in the scene space. Here I apply a material surface to the textures so they can reflect the light from their surface.**

**In this function I also implement the helpful text section mentioned above.**

**void ofApp::keyPressed(int key) – this function handles user input and here comes the interactive aspect of the scene. The user can toggle between the 4 different models by pressing the 1-4 buttons. Also there are functions which handle the user input made with the mouse. When the user clicks and holds the mouse and drags it on the y-axis every animation frame of the currently selected model is being played for a more detailed overview.**