

## FINAL PROJECT

In this project you should create a humanoid (obviously with the elements of a human, such as head, arms, legs, etc.) that moves realistically with the goal of fulfilling a task assigned to him or participating in a game (he must walk and / or running in the environment). This humanoid should well remember a human (including in movements), so remember, for example, that the arm is not formed by a single hub and that the two arms do not need to move together in the same direction at the same time !!

You will define the function of your humanoid, but this should include moves to chase something that will appear at the click of the mouse. There may be several clicks in different positions and the humanoid should chase one by one in the order in which the object appears. The user should not wait until the humanoid has hunted the first object to include the others. When you pick up the object that appears on the screen, the humanoid should perform a task with the object. This will be part of the that you attributed to the humanoid or game that you have defined. Do something that includes not only go through the scenario, because the parties that will count the most points in the evaluation will be: humanoid model and scenario, correct movements and complexity of the executed task, besides the correct execution of the task assigned to the character. Build a scenario that conform to the task being performed by the humanoid. Include an option to trigger an animation in which the humanoid walks around the environment running alone task without the need for mouse clicks.

The project should be developed *individually* .

In the delivery of the project (to be done **by the end of class on 11/12** in the Moodle) the student must deliver, in addition to the code presented in class, a content report each of the following sections:

- Cover: job title (create a name for your animation), your name, UC, name of the teacher and, at the bottom of the page, the city and the date of delivery of the project;

- Introduction: with a motivation of the chosen theme and a brief summary of the objective of work;

---

## Page 2

- Objective: clear explanation of the function of the humanoid and the game (if it is a game). Include also an explanation of what inspired you in the creation of your animation;
- Methodology: how your scenario and character (or characters, if there are more than 1) have been assembled, which methods, techniques and concepts have you used, such as run your work and every function of it, and everything else that's important to evaluate your job;
- Results and discussions: In this section you should put its animation, including the constructed scene and the character (s), and details about everything the scenario contains (of objects, for example), which appears with the mouse click (put an enlarged figure of what will appear), what menu that you have included, what each option does, what keyboard and mouse options, etc. Put illustrations to help you understand your work. Include report of relevant things that happened during the development of the work, such as problems that occurred and how they were resolved. **Highlight the that was made extra in your work** , since this will count extra points for your note.
- Conclusion: summary of what has been done, what is important and what has been important to you in this work in terms of learning the discipline.

### *Specifications :*

- The entire project should be done by calling the library's basic primitives OpenGL (including the GLUT and GLU libraries) seen during the course.
- Unseen basic functions can be used (for example, draws a cylinder or other basic figure), but advanced functions will not be allowed. When in doubt, always consult the teacher if you want to use function not seen in class.

- Include menu of options for executing program features. O keyboard can be used for humanoid (or scene of what is more important to evaluate) in x, y and z. You can also include functions in the

---

### Page 3

keyboard to zoom in and zoom out. All these features are mandatory, but may appear as keyboard features. The other functions of your program should appear in the options menu.

- You should include options for moving *separately* (obviously obeying the proper hierarchies) every part of your humanoid. The movements should be locked to look realistic, ie one arm does not rotate 360 degrees at z, but also does not rotate only 10 degrees. Be consistent with the real !!! It is necessary that each part of it can be moved separately by commands chosen by the user in the options menu. For everything to work properly you should use the hierarchy concept seen in class. Include options in the so that the user indicates which part of the body he will touch and, **always using the same arrows** , the part of the chosen body should move with each click in a arrow. For example, if the "right hand" menu is chosen from the right hand arrow rotates it on one side and the left arrow on the other. Then, if you choose "Move the head", the same arrows (right and left) will move the head to each click.
- The entire program should be developed using the C language, as always was used throughout the course. The program should run in Codeblocks (Linux or Windows) or XCode (for Mac). The only graphic libraries allowed are those used in class, that is, OpenGL, GLUT and GLU. Remember that you must present your program to the teacher. That way, if you do not bring your notebook to present your program, test it in the lab before presentation.
- The movements in the environment must be performed by geometric transformations (you can use the pre-defined OpenGL transformations).
- You should build the entire scene using perspective projection, light source

(at least one source containing ambient light, specular and diffuse) and texture one less).

- The output of your program can be by pressing the "Esc" key or by pressing the menu.

---

## Page 4

- Include the Reshape function, as seen in class, so your scene is not deformed when the window size is modified.
- The model of the character (s), as well as the model of the whole scenario, will be heavily charged in the evaluation.
- Correct movements of the character (s) and correct execution of the task will be even more important in the evaluation than the characters themselves.
- Very simple animations or models will not receive good evaluation, therefore, caprichem in their creativity and in the development of this project.
- Use of *splines*, *sweeps* , various light sources, camera, besides the character etc., will be able to value your work and increase your note.
- Everything must be mounted in a three-dimensional scenario, but it is not necessary that the characters walk in 3D, that is, they can walk on the plane only once that the mouse position in the window will always be 2D. Make the most of the techniques of computer graphics seen in class.
- You should also produce a film containing the workings of your program. Use a program to record the screen while you your project and the automatic animation that it does. Post this movie along with your project. You will lose note if you do not post the movie !!!
- In addition to the standard project mark (0.0 to 10.0), students can earn up to 2 points additional. Items that can value your work: quality of work, realism correct timing in animations, ease of use program, correctness and, above all, complexity involved in development of the project on the technical implementation and use of

related to computer graphics (this is one of the items that will be taken very consideration in the project analysis).

- The quality of the report will also compose your final project grade, so do not do it anyway and let alone deliver it so you do not lose points in the note.

---

## Page 5

- On the day of the project presentation the student should only run the program for the teacher explaining its functionalities, that is, it is not necessary to prepare any presentation.
- Any partial or partial copy of third-party code (colleagues, books, the Internet, etc.) will result in a zero grade **for the student** .
- Deliver everything compressed into a single file in Moodle. Please put the name of the file as your name.

*Delivery date* : until 11/12 will be the presentation of the project in class and delivery in the Moodle. The student who wants to deliver the work before the date (which will be very you can do so by just marking a day and time with the teacher.