**AP Computer Science End-Of-Year Graphics Project**

**The Project Is Open-Ended**

This final lab assignment has no required output. It has no required main method or any other required class or method. This project tests your creativity and your programming skills. It is required that you do a graphics project, which really is more interesting than the plain text-style program. In this lab-assignment-document the requirements are indicated, but you will see that the project is completely open-ended. You select the type of project and the type of Java programming tools to complete the project.

**Your Grade Is Relative**

You may wonder how it is possible to grade a program if it is open-ended. Your previous assignments did clearly show the required output for 100 point program versions. This project has no such guide lines. Your project will be compared to all the other projects. The grading is subjective and starts by looking at every project once. During the first viewing pass, a benchmark project is selected, which seems to be a good example of a program that earns a **90**. A second pass compares all the projects to the benchmark. Better projects can earn as high as 100. Projects of lesser quality than the *benchmark* earn a grade lower than 90. Anybody who is not familiar with the *fat-chance-theory* and casually slaps together a simple, quick project during the last couple of days before the deadline cannot realistically expect to earn a passing grade.

**Working Alone**

The graphics projects should be completed by you individually.

**Importing Graphics Images**

Your project must be a graphics program written to execute as an applet. Keep in mind that your program needs to create graphics images that should not be confused with displaying a set of pictures. You are allowed to import pictures like **\*.gif** files or **\*.jpeg** into your program to support the graphics output of your program, but that cannot be the only graphics part of your program.

**Required Knowledge**

The final lab assignment is not meant to be strictly a demonstration of acquired knowledge. This major program should be an excellent tool to attain additional programming knowledge and skills. It is not required that you do research in areas that were not provided during the year, but you are encouraged to do research if you desire. For instance, you were not shown how to put music in your programs. You also were not shown how to include existing picture files, like **gif** or **jpeg** files in your program, but many students have the necessary skills to research such features and incorporate them in their programs.

**Academic Dishonesty**

Large projects of this nature may tempt students to take improper short cuts or use improper resources. It may be easy to find a project made by another person and turn this project in as your own. Such an approach is hardly clever. You learn nothing. In other words, your project will look very suspicious if it resembles another project.

Students think that they are clever by searching the Internet and using whole programs or partial programs and then turn such programs in as their own. The assumption is that teachers cannot possibly know all the programs that are available. This is totally true, but a slight detail is forgotten. You are expected to do research and learn new material. If your clever program includes new features, you may be in an awkward position to explain these features. Are you prepared to handle the following question? *George and Kathy, I am impressed that you managed to incorporate such advanced topics as multi-threading and exception-handling in your project. Can you explain these topics to me so that I am assured that you did learn this new material?*

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| **Evidence of any type of dishonesty on this project will result in a grade of zero and appropriate disciplinary action for the involved students based on the school's honor code.** |

**Grading Factors**

It was mentioned earlier that projects are graded on a relative scale. However, there are definite factors that change your grade tremendously both negatively and positively. Please read this very carefully, because it is quite possible to earn a **zero** on this project, which will impact your grade very heavily.

The single most important element to consider is the fact **that the program must compile and execute**. During every small stage in developing your program you need to compile the program and then check for correct output. Give each stage of your program a number, such as **Project1.java**, **Project2.java**. This number approach can protect you in the event the final stage does not work. It is so much better to turn in a functional, non-finished project than a program that theoretically is finished, but does not compile.

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| **Any program, regardless of length or complexity, which does not compile and consequently cannot demonstrate any type of execution will result in a grade of ZERO.** |

It is wise to start with a modest program. First make sure your small program works correctly and then move on and add enhancements. Make sure that each enhancement receives a new project number. One of the biggest problems with graphics projects is that students do not comprehend that large programs are very time-consuming. You simply do not have the luxury of many months to develop a major program.

Factors that will impact your grade in a positive manner include: using mouse interaction; using animation; demonstrating originality; using self-documenting identifiers and appropriate comments; making the program crash-proof.

**Program Documentation**

Your teacher requires proper documentation, use self-documenting identifiers and easy-to-understand comments is absolutely vital to debug program problems and to implement any type of program enhancement.

**Project Approval**

At the conclusion of this project document is a **Project Approval Form**. Your first step in starting the project is to fill out the form and obtain approval to start the project. No projects will be approved if all or any part of the project contains:

* any kind of inappropriate language.
* any type of racial, demeaning or prejudicial language.
* any form of drug, alcohol or cigarette use.
* any act of violence or any display of blood.
* any implied violence by the display of weapons or slogans.
* any form of nudity, even if you regard such display as art.
* anything else considered inappropriate by your teacher.

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| **Any program which includes any features that are inappropriate will not be graded, regardless of the computer science skills demonstrated by the program.** |

**Getting Teacher Help**

For the entire year you were able to get help on program assignments. This help was available during scheduled program lab practice and also during tutorial time. For the final assignment, there is little teacher help. This assignment is meant to simulate the type of program assignment you will experience in college. Do not expect the instructor to be available when you have a compile error or when the program output does not make sense. Your college instructor will explain the concepts in class and it becomes your responsibility to translate those concepts to a functional program assignment.

This will be tough for many students. Every time something goes wrong you want to leap to your *security blanket* teacher. Please realize that the ability to identify your own errors and research your own new features is part of the assignment. Please do not go to your teacher with a question like *how do we accomplish such and such*. You do the research. You need to learn how to learn.

**Required Files To Turn In**

Select a team leader. Create a folder with your name like ***KathySmith*** and place all required files inside the folder. Your folder needs the following files:

* **Project.java** (This is the primary file controlling your program)
* **Project.class** (This is the compiled byte code file of Project.java)
* **Support files** (There may be pictures, sound files, additional classfiles necessary to run your program)
* **Project.doc** (if your project requires any special instructions to run the program, place them in this document under

the heading Instructions.)

**Graphics Worksheet**

The next page features a graphics worksheet. You may wish to print this worksheet so it can be used to plan the proper coordinate position of your graphics objects. You are also strongly advised to place separate graphics objects in separate methods with appropriate names. This will help you to identify the different components of your program easily.

**Graphics Worksheet**

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| 0,0 | 20 | 40 | 60 | 80 | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 | 280 | 300 | 320 | 340 | 360 | 380 | 400 | 420 | 440 | 460 | 480 | 500 | 520 | 540 | 560 | 580 | 600 | 620 | 640 | 660 | 680 | 700 | 720 | 740 | 760 | 780 | 799 |
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**AP Computer Science Graphics Project Approval Form**

**Fill out this page on your computer and then send the filled copy to your teacher**

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| **Project Title** | **Name** | **Teacher** | **Period** |
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| **Project description** |  |

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| **Special features you plan to include** | **Check Any Features That Apply** | |
|  | **Mouse Interaction** |
|  | **Animation** |
|  | **Sound** |
|  | **Game capabilities** |

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| **Understanding and agreement to be signed** | **I understand and agree to the following:**  This project will not contain any inappropriate displays, as described in this project document.  No grade can be assigned to any project that does not compile and cannot be executed.  All necessary files must be placed in one folder and must be checked in that folder for correctness.  Any project that is a copy of another project or program or a substantial copy will become a zero.  This project is meant to be an exercise in student initiative and will receive little teacher help.  Signed:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |