ICS

Final Summative Assignment

Stephen Lewis Secondary School
Mr. Lane

1. INTRODUCTION

"The number to Dante's Pizza is 905-881-1070. They deliver and they know where the school is..."
NOTE: There is no food or drink allowed in the computer labs

You have worked hard and the end is in sight. One last project remains to seal your efforts. For this assignment there will be a set of specifications, regardless of group size the specifications will be the same, but the expectations will change. Your group size may range from 1 to 4 people.

Choose your group wisely, not based on friendship. Do not be offended if your friend does not want to work with you, everyone has their own priorities and we should each respect those.

Due to the nature of the project groups are inherently difficult to differentiate when it comes time to mark individuals, as such realize that if you choose to work in a group a **MAJOR** portion of your final mark will be a group mark. Once again, choose your group wisely… Exchange communication details IMMEDIATELY so it never becomes a concern.

Due Dates for each portion of the project can be found on the Moodle, missing a deadline will result in an immediate deduction of 10% for that portion of the assignment. Deadlines will be electronically enforced, if you miss the deadline you will receive the late penalty, plan ahead.

Below is an incomplete list of invalid excuses for late assignments:

- **"My computer was broken"**
  - Computers break down regularly; there are many alternatives such as the computer labs and library at school, a friend/relative's house, etc.

- **"My USB key broke/lost/erased"**
  - Back it up daily, so at most you will lose one day of work.

- **"Moodle was down/slow"**
  - Moodle/the internet is not perfect; your project will be big and take time to upload. Do not upload it at the last minute…plan ahead.

- **"I ran out of money on my print account"**
  - It doesn`t cost much to print a few sheets of paper, just make sure you have enough money on your account and print your materials BEFORE the deadlines, not during the class it is due.

- **"_____ did not get their part of the assignment to me in time"**
  - When working with other people everyone needs to realize they have a commitment to each other, failure to meet your commitments will affect you and your group`s final mark. This is not an excuse, work ahead giving each other early deadlines to get their work done so it does not come down to the deadline.

- **Etc.**
  - Just get it done, be accountable for your actions and be prepared to accept the consequences of not living up to your commitments to yourself and others.

2. PROJECT SPECIFICATIONS

2.1 PURPOSE

- Demonstrate your grasp of the fundamentals of programming and problem solving
- Implement a project of your choosing to completion
- Use the techniques, style and skills learned in class and beyond

2.2 STATEMENT

This assignment is the culmination of your efforts. Its primary purpose is to allow you to plan and execute a project of your own creation. So, do something interesting, below are a few ideas, be realistic base your choice on the skill level and interests of the members of your group.

- Create a game (skill level varies based on game, e.g. tic-tac-toe = novice, platformer = advanced)
- Animate a scene/story (simple in concept, but can be challenging based on length and design)
- Create a useful piece of software to solve a problem (e.g. program to maintain/add/delete your games)
- Create a physics simulator (gravity, collisions, friction, projectile motion, etc...advanced level)
- Anything else of your choosing, assuming it is approved during the proposal process

2.3 PROJECT BREAKDOWN

The project is broken into three goals; the first three goals are a planning meeting and two project proposals. The first course of action after forming your group and trading contact information is to brainstorm a software idea and your group's objective list (described in detail below). Each group will have a meeting regarding this information during the class following this assignment presentation. Use the supplied planning sheet found on the Moodle. No technical research is required for this step. 3 Objectives per group member or 5 for an individual.

The first proposal will be graded, commented and returned to you quickly so you may continue the project. The second goal is a resubmission of your project proposal, revised according to the feedback given. This version will be kept and used to grade your project. The third goal is the final project itself.

In short, your project proposals will contain an objective list and supporting documentation that clearly define these objectives. Over half of your final project mark will be based on these objectives and your ability to complete them **well**. The rest of section 2 describes in detail what is expected for a project and what is needed in the proposals.

2.4 PROPOSAL SUBMISSION

You are to submit a proposal of what you intend to do for your final project. You are given a template (on the Moodle) that you must fill out fully. A **softcopy** only is to be submitted by midnight on the date specified. Your project and objectives must be suitably challenging or they will not be accepted.

Please Note: Your proposal will be read seriously by the teacher, and you will receive criticisms, advice and suggestions on what you propose. These must be taken into account when submitting the second (revised) proposal. **You will not receive any marks for the second proposal, but you WILL lose marks if you fail to submit it.** The project itself is measured against the second proposal so it pays to do a good job on both to ease your effort and achieve a good mark.

Special Note: You must achieve at least one objective to receive any credit for the first proposal. Meaning, if you do not attempt the final project a mark of 0 will be awarded for the proposal regardless of the real grade.

2.4.1 BRIEF TERMINOLOGY

OBJECTIVE:

An objective contributes one fundamental, essential goal to your project, a **significant** component of the software that if not present in the final version the software would feel and act broken or incomplete. For example, some objectives from Angry Birds may be projectile motion and collision detection.

The following is a short list of objectives that are commonly found in these projects (Some may be too simple):

• Integrated Physics (e.g. projectile motion, acceleration)	• Artificial Intelligence	• Complex Sound System
• Complex Resource Management System	• Key-frame Animation	• Particle System
• Complex Collision Detection	• Frame Animation	• Level Designer (not well designed levels)
• Complex Inventory Management System	• Path Finding	• Save/Load Files

MILESTONE

A milestone is similar to a key checkpoint. It helps enforce game completion on schedule. A milestone itself is not a task to be done, but rather a titled date that consists of a number of tasks to be completed by the milestone date. Think of a milestone like a TODO list that is made up of Tasks, Due Dates and Assigned People. Each Milestone in your project must contain one objective owned by each group member and its supporting tasks.

2.4.2 PROPOSAL DESCRIPTION

You will complete the proposal by using the supplied template (similar to the layout of this document), but in general your proposal should include the following sections:

- A **Topics/Purpose list/description** describing in brief detail what you will be making and your goals. (1 – 3 paragraphs or 3 – 5 points). This was already roughly given in the initial proposal.

- An **Objectives** section containing 3 unique (5 for an individual) and significant objectives per group member that will be in the software. For each objective you must clearly name it, and give a short description of where it will be evident in your software.

  Most importantly, for each objective you **MUST** include a technical description of your strategy to program the objective. Go into detail, such as formulas, steps, assumptions, how and which of the core concepts taught in class you will use, etc. **You will DEFINITELY need to think and do research to figure out how to implement something you potentially have never done before.**

- A **Milestones** section which describes a detailed set of tasks to be completed. Using your objectives list break your project up into 3 major milestones broken down into the items that need to be implemented by each deadline. Think of it as a detailed and dated TODO list with accountability. Each task will be assigned to one group member. The list needs to be ordered by required date of completion, For example, task 8 should not require task 13 to be complete before you begin to implement it. It MAY however require any number of tasks before itself before coding can begin.

  Remember, not all tasks need to be directly related to an objective. For example you may have a task description of "Create functioning menu", or "Create title screen". Both are required for the software, but not necessarily related to any objective.

BE CAREFUL! While part of your grade will be based upon your success of reaching your objectives, another part of your grade will be based upon your intelligence, understanding, comprehension, and good sense at setting objectives that are neither too hard to be achieved nor to easy to be significant. Inventiveness and originality will count as well.

GRADING

Marks will be awarded to your first proposal subjectively, by comparing the proposals against each other and expectations. What teachers want to see in your proposal is that you have investigated what you plan to do for your project, and that you have decided upon a reasonable project. To receive full marks for the first proposal, you need to have:

- A clear description of your project
- An outline of the technical details that indicate that you understand the work and concerns involved
- A list of non-trivial, pertinent, obtainable objectives.
- Some amount of individuality in what you propose.

If you are vague about your plans or objectives, if you are too ambitious or have unrealistic objectives or if it is clear you have not read up on your chosen subject you will lose marks. If your submission is not written in a professional tone (not conversational) you will lose marks. Write from a 3rd person perspective.

2.5 SECOND (REVISED) PROPOSAL

A revised copy of the proposal is due shortly after you have received teacher feedback for the first proposal. This time both a **hardcopy** is due at the start of class on the date following the due date as well as a **softcopy** to be submitted online before midnight on the due date. Each group member will fill out a supplied grading sheet with their personal information. **Each grading sheet should be attached to the back of the hard revised proposal.**

The objective list of this document will be used to determine part of the grade for the final project, and thus the proposal will be retained by the teacher, as such will contribute to your project grade. However no marks will be specifically assigned to the revised proposal but will be removed if you fail to submit both physical and digital copies. Remember to submit your proposal **stapled or bound**, a paperclip is not acceptable.

2.6 PROJECT IMPLEMENTATION

Once coding begins each student will attend an in-class progress meeting with Mr. Lane on the day following your first 2 Milestone dates. Be prepared to demonstrate the completion of your tasks that make up the milestone. Failure to meet your target completion by the date will result in a loss of marks for the owner of the incomplete objective.

If your software requires any special instructions on how to run the software such as installing a new font for example please supply a **README.txt** file with the instructions in your project folder.

GRADING

The remainder of the mark will be based upon a subjective assessment by the teacher of how your project ranked against the others submitted this semester, as well as projects submitted like yours in past semesters. In total, the grade will be assigned somewhat like the judging in the Olympics for figure skating or at a ballroom dancing competition.

Your list of objectives provides the scores for the "required elements" (10 marks each, 5 for completion and up to 5 for implementation (logic and efficiency) of the objective. The rest of the assessment provides scores for "merit." The merit judgment will be arrived at by considering the components of "artistic and/or innovative content," "technical application," "quality of documentation/style."

This judgment will necessarily need to be subjective, given the wide diversity of projects. In the past teachers have used such criteria as:

- **Artistic:** Visual design and aesthetics, humour, originality, inventiveness and polish
- **Technical:** Application of course content in practical and efficient ways
- **User Interface:** Quality of interactivity and program feedback, user friendliness. Design and layout of interface elements. The interface should be intuitive, the user should never not know what to do next or how to do something
- **Code:** Efficiency, structure, modularity
- **Documentation:** Style (documentation, whitespace, naming conventions, file organization, etc.)

These criteria are an example, and they may change to suit the diversity of projects submitted of each semester's projects. Nobody's project is expected to hit all of these criteria, so the subjective marks will be awarded where deserved. **It is uncommon for projects to receive all 14 subjective marks, average projects will only receive 7 – 8 marks, exceptional project typically receive 12 – 13 marks.** Teachers will be as fair as possible but the standards will be high and a perfect 14 will not be given lightly.

Special Note: Teachers may also remove marks in any category for things that you have learned during the term that you should have applied to your project but did not. For example, giant blocks of code without the use of subprograms for readability/reusability.

If requested the teacher will do their best to describe to you how the subjective marks were awarded or removed. However, the subjective mark is subjective; it's the teacher's professional opinion. If something was overlooked in the marking then the subjective may be increased. However if it is a matter of your opinion versus the teacher's opinion, then we won't change the subjective mark. E.g. if you feel your user interface is easy to use, but the teacher does not the mark will not be changed.

2.7 DEMONSTRATIONS

On the class following the midnight due date our class will hold our own E3 video game convention. In this environment each group will set up a "booth." Their booth will require at least one computer set up with the software running as well as a sign stating the group's name and program title. Failure to meet this expectation will result in a loss of marks in the documentation section of the evaluation.

During this class we will have the opportunity to play and show everyone's hard work. During this class the teacher will come by each group's booth for a demonstration. At this time all group members must be at the demonstration and all other students will leave the booth during marking. This is the point where the objectives will be displayed, described and evaluated for completion.

Due to the quantity of groups you will not have a lot of time to show all objective in action, so plan ahead to ensure you are capable of showing everything. Anything not displayed in the time given will not receive the full 5 completion marks. A good demonstration will display all the objectives in the order given in the proposal, and then show off actually playing the game itself if time allows.

For demonstration purposes it may be useful to implement key functionality to get to points where you can show off certain objectives, such as a god mode in games or a fast forward or pause in animations.

3. WORDS OF WISDOM AND EXPERIENCE

The following are thoughts on various projects: what worked, what didn't work, etc. based on previous projects.

3.1 FINDING A PROJECT

There are several ways to find a project idea. First, you may have seen something in the course that you want to learn more about. This is the ideal case: just follow up on what you are interested in and see if you can make it into a project. The second way to find a project is to look for an interesting topic online or in a textbook.

In both cases you should try to find a project that is neither too hard nor too easy. The first step in deciding if a project is just right is to make up a list of objectives. Look at the list of subjective marks, will the topic lend itself well to attain those subjective marks or are you setting yourself up for a low mark.

As a general comment, think of the final overall effect you want from your project and come up with objectives for that effect, rather than think up objectives and build a project around it. For example, rather than say "I want to play music while showing key-frame animation and hitting keys." It'd be better to say "I want to write a rhythm game similar to guitar hero for a keyboard." The objectives are roughly the same, but the second statement results in a cohesive project, while the first results in an unsatisfying project even if all objectives are met.

3.2 ABOUT THE PROPOSAL

The goals of the proposal are to tell the teacher what the project is and convince the teacher that your project is reasonable in the sense that it's not too hard and not too easy.

TECHNICAL OBJECTIVE DESCRIPTIONS

In this section you will need to explain the important algorithms and concepts that will be necessary to achieve your objectives. Remember you must convince the teacher that you understand what is involved with each objective. For example if you have projectile motion as an objective you must explain to the teacher how you intend to track, manipulate and apply the individual information for each particle, not in code, in English. Include things like necessary equations and/or steps for the algorithm.

When the teacher reads your objective list the teacher will refer to your technical description for details. A good technical description will tell the teacher exactly how you intend to achieve each objective.

OBJECTIVES

Each objective should be an even portion of the assignment. For example, if you have 6 objectives, each objective should be roughly $1/6^{th}$ of your work. A poorly done proposal is often characterized by attempting way too much and that comes from not understanding clearly what is involved, either in terms of objectives or in the difficulty of each objective. If a project is too difficult, you may have trouble getting your objective marks.

Items that are too difficult and need to be broken down:

- Add physics ← what kind, when, where, how?
- Add animation ← Again, what kind, key frame movement, multi-frame

Items that are not really objectives but basic requirements of any program:

- Code is well organized
- Comments are descriptive
- Program executes correctly

Items that are too vague:

- Interesting interaction
- Useful feedback given on screen
- Good use of colour

In short an objective should be precisely stated, clearly understood and capable of unambiguous determination about whether and to what degree the objective has been met. Do not use subjective words like "nice", "easy", "useful", "simple" or "interesting."

Concentrate on objectives that are addressed specifically to the unique points of your individual project. An objective is given as a short, simple declarative statement. For example: Vector addition is used to simulate projectile motion.

4. ACADEMIC DISHONESTY (CHEATING)

Plagiarism and other acts of academic dishonesty will be dealt with harshly in accordance with the school's rules on a case by case basis. Talking about the questions is allowed, this is called collaboration. **Copying/Using/Giving code from/to friends or other sources is considered cheating.**

To ensure you do not cross this line; when talking about a question with someone do so away from a computer with a paper and pen in hand and write out **IDEAS**, not code. Then when you are finished talking return to your computer and implement the ideas you have come up with.

5. PERSONAL RESPONSIBILITY

This will be a large scaled group project, but you are evaluated individually. Your group members will be counting on you. So get your work done well and on schedule or you could be costing not only yourself but others the marks they may need.

6. DELIVERABLES

- **Part 1: Initial Proposal**
  - ☐ Pre-Proposal Objectives List
  - ☐ Initial Proposal softcopy (online before midnight on due date)

- **Part 2: Revised Proposal**
  - ☐ Revised Proposal hard copy (start of class on day following due date)
  - ☐ Filled out marking sheet for each group member (attached to back of proposal)
  - ☐ Revised Proposal softcopy (online before midnight on due date)

- **Part 3: Final Project**
  - ☐ Final Project Zip File
    - ☐ Documented
    - ☐ Test and commented out code removed
    - ☐ Program executes
  - ☐ README file **if needed** (put in project folder)
  - ☐ Demonstration prepared and organized to display objectives and subjective content (Oral, Visual)