CPG 5 Coding and Programming

Introduction to Game Programming

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Coding and Programming

Welcome

Content of this course

This module covers two broad subject areas: programming and project management.

The goals of this module are to provide:

- an understanding of fundamental programming concepts
- help with turning your game designs into program code
- techniques for low level and high level programming
- an understanding of why game programmers work the way they do

This is a 12 week module. It is broken into the following subjects:

1. introduction
2. Boolean logic
3. numbers and other data types
4. memory, registers, and loops
5. programmable circuits
6. machine code
7. assembler
8. 3rd generation languages
9. modules, libraries, and linking
10. virtual machines and game engines
11. object oriented programming
12. further study

Tip

It is easy to create a game design that is difficult to program. With a little game programming knowledge, you can avoid designing things that are more difficult to program than they need to be. This will allow your programming team to spend more of their time and effort on the fundamental features of your game design, and less working around any unintentionally awkward bits.

Lesson plan

The structure for each class in this module is the same throughout. I will make the course materials available each week before the class. Please read through the materials and follow any tutorials before the class begins. I will briefly recap these subjects at the beginning of each class.

The materials will contain:

- a description of the subject for the week
- a tutorial in related programming or project management techniques
- a description of any course work required

The intention of this format is to provide the maximum amount of class time for dealing with questions relating to the subject or problems creating the course work. Course work relating to the production of your game program or game programming exercises will be identified as CW1. Course work relating to project management will be identified as CW2.

Week 1

Introduction

This week's subject areas are:

- task tracking
- source control

We'll look at task tracking first as you will be required to track your time on tasks for the rest of this module. A log of your tasks is one of the required items of course work for CW2.

Source control is a system for managing the source code and other assets within a programming team. In this course, you'll get your course materials and submit your programming exercises through a source control system.

But before we begin, please point your browser to the following link:

2012-2013 programming questions [https://docs.google.com/spreadsheet/viewform?formkey=dFpKTEpNV3V4dko2UXktQnF3YUNDZ2c6MA]

These questions will help me gauge my teaching effectiveness in the subjects covered by this course. I will ask you to take this test again at the end of the course. The answers are anonymous, so please answer honestly, and don't guess, look up, or copy somebody else if you don't know an answer. There are around 20 questions and should not take long to complete, particularly if you don't have any previous programming experience.

Task Tracking

To manage the development of a game project, you need to produce reliable estimates. By keeping a log of the time it takes to complete tasks, you can improve your predictions about future work.

Tip

Programming is a mentally engrossing task. It is more difficult to keep track of passing time than you might imagine. Keeping a written log of start and end times helps to keep your guesses closer to reality.

To keep an accurate log of your time on a particular task you will need to track the following pieces of information:

- a description of the task
- start time
- end time
- any interruption time

From these items of information you can then work out the time taken to complete the task by working out the difference between the start and end times and subtracting any recorded interruption times.

An easy way to manage this is with a spreadsheet program. There are freely available spreadsheet programs for most computing platforms. You may use any software you like to record your work logs. However, for submission of your CW2 course work, please make sure you can output your results to either `pdf` or plain `txt` format files.

	A	B	C	D	E	F
1	date	start	stop	interruptions	time	task
2	14-Oct	10:00	10:30	00:05	00:25	something
3	14-Oct	10:30	11:00		00:30	something else
4						

Libre Office or Google Docs provide good freely available spreadsheet software that can output to `pdf`.

To keep track of interruption time, I use a stopwatch, but any device with a similar function can perform this task.

A feature of spreadsheet software is its ability to perform calculations on your data. It is possible to get the spreadsheet software to calculate the task duration for you. If you don't know how to do this, please ask about it during the class.

Source control

When working on larger game projects, the developers will use software to manage their collaboration. This software is usually called source control, revision control, or asset management software. On this course we'll be using Google Code as our repository for course materials and your exercise files. The source control system we'll be using is called Subversion (SVN) source control system. There are SVN client programs for most platforms. If you're running the Windows operating system, please download the Tortoise SVN client program from this location:
Download Tortoise SVN [http://tortoisesvn.net/downloads.html]

Users of other operating systems, please ask about alternative client software for SVN during the class.

Windows users may need to disable the Windows file indexing service.

Subversion troubleshooting

Problems running Tortoise SVN on Windows 7

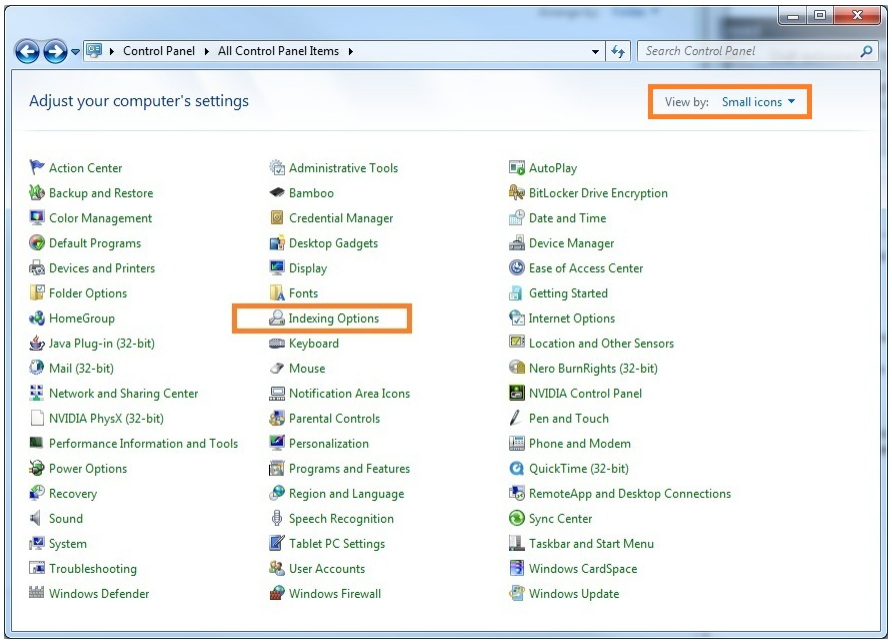
Windows 7 has a feature that constantly monitors and indexes your files as you create and modify them. Unfortunately this causes problems for programs that rapidly create, open, modify, and move files around. Tortoise SVN is such a program.

If you experience constant errors while trying to update or submit files through Tortoise, try turning off the indexing service on any linked folders.

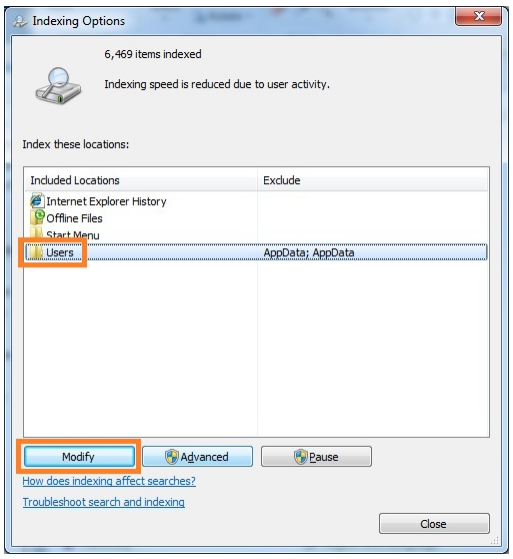
Turning off Windows indexing

To turn off the windows indexing service:

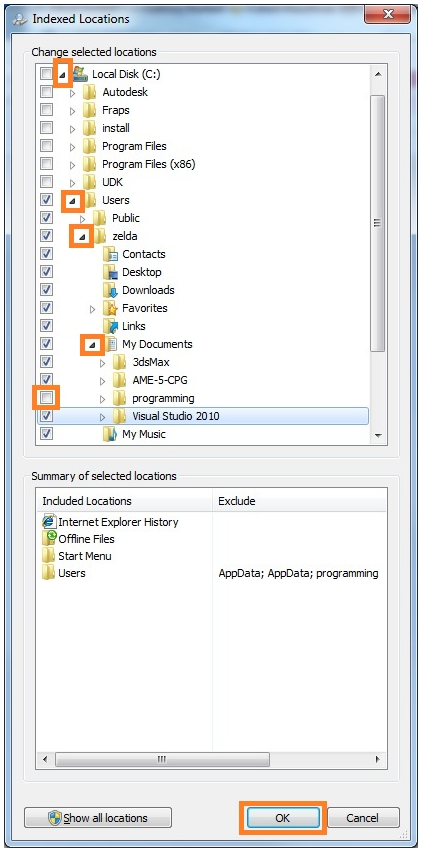
- Open the Windows Control Panel.
- Choose "View by: Small icons" to get the full list of options.
- Click on the "Indexing Options" entry.



- On the next screen, select the "Users" folder.
- Then click the modify button.



- On the next screen, open the folders to find your data.
- Deselect any folders you have linked to source control.
- Finally, click on the OK button.



This should reduce the amount of errors you get when updating and submitting files through Tortoise SVN.