# PC-Rower Notes

Introduction

The base of the code was created for my dissertation at the University of Durham, England and was written in Java to allow cross-platform support. Unfortunately time ran out for me to do much more than try the software on Linux and see what happened (it didn't work!) After returning from travelling I made a few improvements and managed to get the software working on Linux and almost on a MAC (problems with the boats not refreshing so appear they are not moving).

Since then I have sadly run out of time to continue development, although do not want to see my efforts go wasted. I am therefore releasing the code, under a GPL license, in an effort to allow the project to continue.

PC-Rower version 1

Although the GUI doesn't look much (again, I ran out of time) the core of the software is well written and can easily be expanded. For example adding graphing or PM3 support (see notes later) would be trivial. This is because all input and output devices are programmed to an interface and thus the programmer would only need to be concerned with this small section of the code.

The original architecture is shown in the diagram below:
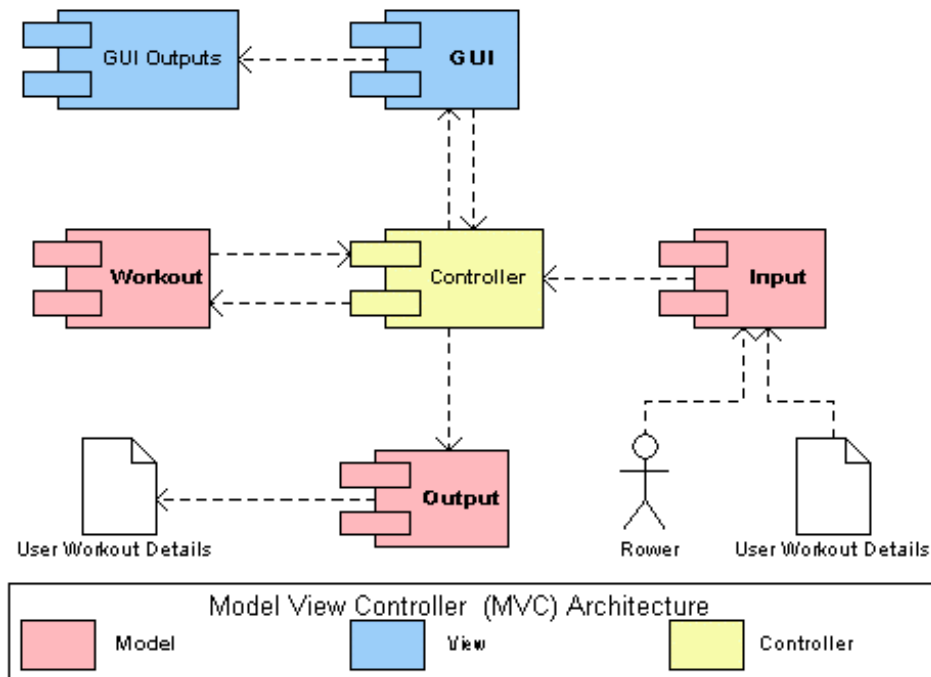
An in depth knowledge of the system can be found by reading my dissertation or reading the source code notes, although I recommend at least familiarity with section 3 of the dissertation which details the design.

Although my original architecture proved to work very well there were a few improvements I decided that could be made. In the mean time Concept released a PM3 unit and it was therefore decided to make a much improved new version of the software.

PC-Rower version 2

I have constructed a similar architecture. Essentially the development falls into several categories:
- The core of the software that makes it run
- The GUI (written in SWT), to support multiple languages
- A revised input interface and implementations for PM2 (I've pretty much done this one) and PM3. Ideally one for internet racing as well. Investigation into direct connection from a rowing machine (Not via a PM unit - I've a few notes on this)
- The GUIOutput interface and implementation for a 2D river with boats, a PM2 clone and graphing. Preferably a PM3 clone and 3D river (OpenGL). Other ideas include music player and webcam integration.
- The output interface with either an XML or database implementation (database location should be definable so could connect to an internet server). This should also include an interface to allow retrieval of data for post workout analysis.
- Post workout analysis module (graphing, lists of workouts etc)
- Possibly a workout planer that suggests workouts and plans to events. Should use an XML file so that software users can create their own plans and upload to a website for others.
- A website to hold user plans and workouts

Basically the architecture works like version 1 so when a workout is started the core retrieves data from the input devices via the input interface and pumps it out to all registered output devices through the Output interfaces. This means many implementations of input and output devices can be used without complicating the code.

I experimented with compiling version 1 to native code and although it worked, the performance increase was very small. It will still be worth investigating again though (I have some performance notes).

Version 1 used RXTX for the serial communication, dom4j for XML logging, gcj for compiling and SWT for the gui. It is envisaged for this to continue as they all worked well and I would also like in include log4j to enable full logging as well.

The one current problem is Java doesn't currently support USB, which will be required for the PM3. However this is rumoured to be on the way by mid-2005 and there is

already a Linux implementation. As a workaround for Windows it is possible to call native code from Java so the Concept windows pm3.dll can be used.

I've included my build files although path alterations will be required for it to work on your system.

Ideally future work will concentrate on version 2 although I will understand if people want to plan with version 1 and get new bits working there.

I am looking for volunteers for the sections outlined above so please email me at feedback@rowtheboat.com if you are interested. I am unsure of what my involvement will be as from May I will be away in Asia for 3 months travelling. However until then I am happy to help get the project off the ground.