Nukesoft LLC.

Programming Environment for Reactor Software

To: Nukesoft LLC.

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Re: Programming Environment for Reactor Software

Dracula, an ACL2 programming environment for Dr. Racket is the best choice for the Nuclear Reactor contract. Since this reactor is going to be in a densely populated metropolitan area, it is imperative that we provide bug free reliable code. If something were to go wrong with our software people's lives could be at stake, and Dracula facilitates writing solid bug free code.

ACL2 is a library for common lisp. It provides many helpful testing and theorem proving features that can help us prove our software is solid before it is implemented. ACL2 was intended to be an "industrial strength" version of the Boyer-Moore theorem prover. It provides a mechanical theorem prover that was named the most effective theorem prover in 2005.

The property testing feature is also a very powerful tool for ACL2. It lets us mechanically test our code with random values to ensure that it meets certain property specifications. This is much better than the normal Ad-hoc testing methods for most software projects, and allows us to use test driven development methods.

ACL2 provides a demonstrable way to show to our employers that our software is mathematically correct. It also provides us with an extensive testing feature that allows us to show our software meets certain properties. This forces us write more mathematical, bug free code. While there are other theorem provers out there ACL2 seems to be the best suited to our specific project.

So in the end ACL2 is the best choice for this job because it provides a mechanical theorem prover and testing suite that facilitates writing bug free code. It allows us to show our employer that our software will not break and will hopefully help save lives.