****

**Programming competition – $1000 prize!**

**Primal Space Systems, Inc. is looking for skilled programmers, and we’re giving out cold hard cash for doing the type of coding we do. Think of it as a chance of getting paid for a job interview.**

**Requirements:**

* **Purely C++** - no java, C#, Python, Perl, Haskell, Lisp, Pascal, Fortran, Assembly – **just C++ 11 with STL** please.
* Given a 3D model defined as an array of v vertices (defined via 3 floats x, y, z) and an array of t triangles (defined via 3 indices into the array of vertices). We have supplied 3 models to experiment with in a custom JSON and Wavefront obj format, which are found in the stub project linked below.
* Use of **Visual Studio 2015** is recommended; it can be downloaded for free from the link below
  + <https://www.visualstudio.com/en-us/downloads/download-visual-studio-vs.aspx>
* Extract and implement the **Hugues Hoppe progressive mesh** functionality using the types defined in the supplied header file in the GitHub stub project, **CommonTypes.h** (Some will recognize these types as being a subset of the types used in the Unreal Engine). Fully functional code to do this and many, many other things is available in the link below.
  + Primal Space stub project: <https://github.com/primal-space-systems/ProgressiveMeshChallenge>
  + Hoppe paper: <http://hhoppe.com/pm.pdf>
  + Hoppe source code: <https://rawgit.com/Microsoft/Mesh-processing-library/master/README.html>
* Add in the **Gortler** modification to ensure the progressive mesh remains inside the original mesh for all splits. The modification is presented in Section 3.1 (Progressive Hull – Interior volume) of the following paper:
  + Sander, et al. paper: <http://cs.harvard.edu/~sjg/papers/silclip.pdf>
* Save the results in a JSON file.
* Submissions should be sent via email to [info@primalspacesystems.com](mailto:info@primalspacesystems.com) with a link to a download site.
* The deadline for submission is **midnight EDT on September 30th** 2016.

**How the winner will be chosen:**

* The code generates a progressive mesh that is always inside the original mesh (i.e., the code works).
* The code uses all the correct types, good variable naming, and is easy to follow (i.e., the best written code).
* The code finds a good balance between ease of use and configurability.

**The small print:**

* Multiple participants could be invited to a follow up interview, but a job offer is not guaranteed and will be contingent upon further assessment of the candidate.
* The winning submission belongs to Primal Space Systems, Inc.
* The winner is decided purely at the discretion of the programmers at Primal Space.

Primal Space Systems, Inc. is a Raleigh based startup technology company working on innovative occlusion algorithms for automatic navigation and game streaming.

[**www.primalspacesystems.com**](http://www.primalspacesystems.com/)