

C++ AMP CONTEST

Rules and Regulations

**You have to learn the rules of the game.
And then you have to play better than anyone else.**

Albert Einstein

As much as we dislike donning the suit of the crotchety old preaching crone, lack of rules leads to chaos. In order to avoid that, we will use this conduit to introduce a minimum set that ensures everybody is on the same playing field. Please think of them as abuse preventers as opposed to burdens.

Competitor related aspects

- 1) The contest is aimed at single-competitors, as opposed to teams – only single person registrations will be accepted;
- 2) There are no geographical constraints in place, other than being located on earth, that is;
- 3) Staff members or relatives of staff members from AMD, Beyond3D or Microsoft are not allowed to participate;
- 4) We kindly ask you to provide minimal contact information upon registration, in the form of name and email address;



- 5) Winners will be required to provide more extensive information in order to allow us to perform prize submission and related activities.

Software related aspects

- 1) We define a submission as a full Visual Studio 2012 solution implementing the contestant's approach to accelerated solving of Symmetrical and Asymmetrical Travelling Salesman Problems;
- 2) All submissions shall be sent to contest@beyond3d.com, and will include proper contestant identification;
- 3) We accept only submissions using C++ as the language and Visual Studio 2012 Release Candidate[1] or Visual Studio 2012 RTM as the IDE;
- 4) Non-compiling submissions are disqualified by default – please ensure that your code compiles without any issue before submitting it;
- 5) Use of and reliance on third party libraries is not permitted – please limit yourself to the libraries provided by Visual Studio 2012;
- 6) Your solver will have to produce an optimal (or close to optimal) tour – the distance from the known optimal solution is factored in the final scoring;

- 7) The upper limit on problem sizing is 8192 nodes;
- 8) There is no time limit imposed on the solve, other than the need to be faster than the solutions submitted by other contestants;
- 9) We kindly ask that your code is fit for taking in the input data as a Tsp_container struct:

```
struct Tsp_container {
    std::vector<float> pbl_dist_mtx;
    std::string pbl_name;
    std::string pbl_type;
    unsigned int pbl_dim;
};
```

If you prefer to write the loader code, do it so that it is capable of handling files in TSPLIB format [2];

- 10) All the submitted code shall be fit for being published without infringing upon the rights of any other party;
- 11) The code will be published under the MIT license [3].

Hardware related aspects

- 1) The set of CPUs that we will test your code on is C = {AMD E-350, AMD A8-3500M, AMD FX-8150};
- 2) The set of GPUs that we will test your code on is G = {AMD HD6310, AMD HD6620G, AMD HD5870, AMD HD6970, AMD HD7970};
- 3) Outside of the above, we will check for correct execution on Intel CPUs and NVIDIA GPUs, although they will not be accounted for in the performance measurements;
- 4) All test systems will include at least 4 GB of RAM;
- 5) All test systems will have Windows 7 Professional and Windows 8 installed.

Refereeing related aspects

- 1) The refereeing board includes the following gentlemen:
 - a. Don McCrady from Microsoft;
 - b. Hasibur Rahman from Microsoft;
 - c. Artur Laksberg from Microsoft;
 - d. Robin Maffeo from AMD;
 - e. Lee Howes from AMD;

- 2) Contacting the referees directly for contest related issues is discouraged;
- 3) The contestants shall be ranked based primarily on their solution's performance, but also, to a lesser extent, on the quality of their code;

Prize structure related aspects

- 1) The winner shall be awarded:
 - a. A *Visual Studio 2010 Ultimate* license upgradeable to *Visual Studio 2012*;
 - b. A system in the following configuration: *AMD A8-3850 2.9GHz Quad-Core CPU, ASUS F1A75-V PRO MB, 8GB RAM, 500GB SATA HDD, BDDVDRW optical drive, Windows 7 Professional*;
 - c. An *AMD HD6970* GPU;
- 2) The runner-up shall be awarded:
 - a. Same as 1.a.;
 - b. Same as 1.b.;
 - c. An *AMD HD5870* GPU;
- 3) The contestant in the third place shall be awarded:
 - a. An *AMD Phenom II X4 940* CPU;
 - b. An *Asrock K10N78D* MB;
 - c. An *AMD HD6970* GPU;

References

- [1] "Downloads | Microsoft Visual Studio 2012." [Online]. Available: <http://www.microsoft.com/visualstudio/11/en-us/downloads>. [Accessed: 11-Jun-2012].
- [2] "TSPLIB." [Online]. Available: <http://comopt.ifi.uni-heidelberg.de/software/TSPLIB95/>. [Accessed: 11-Jun-2012].
- [3] "Open Source Initiative OSI - The MIT License (MIT):Licensing | Open Source Initiative." [Online]. Available: <http://www.opensource.org/licenses/mit-license.php>. [Accessed: 11-Jun-2012].