C&G practical assignment 1

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C&G practical – 1st assignment

• CGC Webpage:  
  http://www.cs.vu.nl/~kielmann/cgc/

• JavaGAT: library part of Ibis designed to ease grid submission

• Your task: develop a task farming library (JOINC) using JavaGAT and test the performance on DAS-4
C&G practical – JOINC

• JOINC is a task-farming library written for this course
• Some pieces in JOINC are missing!
  – Implement them using JavaGAT
• Two applications to test performance
  – Prime number factorization
  – Traveling salesman problem
C&G practical – JOINC

• One master, multiple independent tasks
• No inter-worker communication
• Master class – interface between your solution and example problems
• Task class – task description
Master class methods:

- `int maximumWorkers()` – how many workers may JOINC use
- `int totalTasks()` – how many task will the master create?
- `void idle()` – to give CPU time to the master when JOINC is idle.
- `Task getTask()` – get next task from the master.
- `void taskDone(Task t)` – return finished task to the master.
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Master class methods:

• `void start()` – start the JOINC library (your code here!)
C&G practical – JavaGAT

• Interface for performing basic tasks on clusters (e.g. scheduling, copying files)
• Hides complexity, easy interface
• Multiple plugins (e.g. cp, scp, sge)
C&G practical – Solution

- Code
- Documentation
  - how you schedule tasks
  - how you handle in and output files
  - how you handle crashing tasks
  - experiments results
- Prime and TSP measurements
  - run on 4, 8, 16 nodes
  - analyze JOINC and middleware overhead
  - show a breakdown of the average worker time
  - describe the failure rates encountered
  - estimate of the speedup if the queue was empty
C&G practical – deadline

• Deadline 1st assignment: 3 weeks from now
  – 2th March 00:00 Hawaii timezone
• Use Blackboard for handing in solutions: http://bb.vu.nl/
• 1st tip: don’t start late!
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• Good luck!