Parallelization with OpenMP: the Mandelbrot set

Download the mandelbrot.zip file from Campusnet and unzip the sources. There is a C and a Fortran version - choose whatever suits you.

Exercise 1:

1. Generate the serial version by using 'make'. Note: on Solaris standard make won't work — use 'gmake' instead. If the build process fails, try to do a 'make realclean' before you do 'make'. Run the executable and check the output in the mandelbrot.png file.
2. Parallelize the generation of the Mandelbrot set using OpenMP worksharing constructs. Check the runtimes for different numbers of threads. Note: Dumping the image to the disk takes a fixed time, independent of the number of threads.
3. Does your code scale? How can you check this?
4. What do you have to change to make the code scale?
5. Create a version of the code that uses orphaning.
6. Optional: Can you come up with a solution that uses OpenMP tasks? How does this version scale compared to the one using worksharing?