Programming in C++
Fall 2005
Assignment #1

Consider a deterministic version of the optimal growth model in which the equilibrium is characterized by the bellman equation

$$V(k) = \max_{k'} \{U(f(k) - k') + \beta V(k')\}, \tag{1}$$

and U and f take the following functional forms:

$$U(c) = \frac{c^{1-\sigma}}{1-\sigma}, \tag{2}$$

and

$$f(k) = zk^{\alpha} + (1-\delta)k. \tag{3}$$

Solve for the agent's optimal savings policy using C++ by discretizing the state space around the steady state and iterating on the value function. Use the following parametrization: $\alpha = 0.36$, $\beta = 0.985$, $\delta = 0.0225$, $\sigma = 2$. Set z such that output is normalized to 1 in the steady state.

Note: Don't make your grids too fine: 250 points max. Since all your arrays are using static memory if you use too many points you might run out of memory on the stack and you will get a segmentation fault.

Note that you can send your output to a file by running the executable from the DOS command prompt and directing its output to a file. For example if my executable is called `myprogram.exe` I would type:

`myprogram.exe` > `results.xls`

to send my results to an excel file. You should use excel or matlab to graph the optimal policy and value functions.

Send your graphs and code to me before the next class. Your code she be neat, readable, and well commented.