Problem 7.7 Suggestions

1. Generalize eq. 7.14 for a two electron atom with Z_o protons.
2. Rewrite your result in the format of eq. 7.28.
3. Explain why the first two terms give the same result as before, $2Z^2E_1$.
4. Show that the first two expressions inside the last term can be written as $2\frac{(Z-Z_o)}{Z}\langle V\rangle$ where $\langle V\rangle$ is the potential for a one-electron atom with Z protons.
5. Use the Virial Theorem eq. 4.190 to show $\langle V\rangle = 2Z^2E_1$.
6. Make an argument as to why the remaining term is unchanged.
7. Finally, show that your expression for $\langle H\rangle$ reduces to eq. 7.32 when $Z_o = 2$.
8. Complete problem 7.7 by filling in the table below:

Ion	Z_o	Z	$\langle H\rangle_{min}$
H^-			
He			
Li^+			