

C-S 743 Software Verification and Validation

Assignment 4

Formal Verification

All the answers must be typed. No hand-written assignments will be accepted.

You must use propositional logic for the following problem.

If the death penalty is not cruel and unusual punishment, then either it is cruel and unusual punishment or if society is justified by using it, then it will deter other criminals. If the death penalty is cruel and unusual punishment, then it is both cruel and unusual punishment and its use degrades society as a whole. It is not the case that both the death penalty is cruel and unusual punishment, and its use degrades society as a whole. Furthermore, the death penalty will not deter other criminals. Therefore, society is not justified in using the death penalty.

write the statements as propositions and prove the conclusion which is stated as the last statement in the above paragraph. Make sure that you write every step of the derivation process and write your conclusion in English at the end.

Hint: Treat the phrase “cruel and unusual punishment” as one single term.