**Assignment #5**

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1. Use **formal deduction** to prove the validity of the following argument:   
     
   *Premise 1*:   
   *Premise 2*:   
   *Premise 3*:   
   *Conclusion*:   
     
   Let   
     
   Add to the set of premises.   
     
   1.   
   2.   
   3.   
   4.   
   5.   
   6.   
   7.   
   8.   
   9.   
   10.   
   11.   
   12.   
   13.   
   14.   
     
   Therefore,.
2. Use **resolution for propositional calculus with the set of support** strategy to show that the following argument is valid:   
     
   Premise 1:   
   Premise 2:   
   Premise 3:   
   Conclusion:   
     
   1.   
   2.   
   3.   
   4.   
   5.   
   6. Resolve   
   7. Resolve  
   8. Resolve   
   9. Resolve  
     
   Contradiction reached by resolution, the argument is valid.
3. Consider that by translating an argument into the language of propositional calculus and by adding the negation of the conclusion to the set of premises we obtained the set of clauses.   
     
      
   Apply the **Davis-Putnam procedure** to find or whether or not the original argument was valid i.e. whether or not the set is satisfiable. Show in detail all the intermediary steps. In particular, for each elimination of a variable, show which are the sets and. For each resolvent indicate what the parent clauses are. Eliminate the variables in the order   
     
    all clauses 1-9  
      
     
   Eliminate Q:  
     
   :  
     
   :  
     
   Contradiction, since , argument is valid.
4. Prove the validity of the following argument by using **resolution for predicate calculus**. Use the method described in class.   
     
   *Premise 1*:   
   *Premise 2*:   
   *Premise 3*:   
   *Conclusion*:   
     
   *Premise 1*:   
   *Premise 2*:   
   *Premise 3*:   
   *Conclusion*:   
   *Conclusion*:   
     
   1.   
   2.   
   3.   
   4.   
   5.   
   6.   
   7.   
   8. Resolve   
   9. Resolve   
   10.   
   11. Resolve   
   12.   
   13. Resolve   
   14. Resolve   
     
   Contradiction, therefore, the argument is valid.