First Order Logic

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1 First order logic

```
# Import libraries
import aima.utils
import aima.logic
# The main entry point for this module
def main():
# Create an array to hold clauses
clauses = []
# Add first-order logic clauses (rules and fact)
clauses.append(aima.utils.expr("(American(x) & Weapon(y) & Sells(x, y, z) & Hostile(z)) ==>
clauses.append(aima.utils.expr("Enemy(Nono, America)"))
clauses.append(aima.utils.expr("Owns(Nono, M1)"))
clauses.append(aima.utils.expr("Missile(M1)"))
clauses.append(aima.utils.expr("(Missile(x) & Owns(Nono, x)) ==> Sells(West, x, Nono)"))
clauses.append(aima.utils.expr("American(West)"))
clauses.append(aima.utils.expr("Missile(x) ==> Weapon(x)"))
# Create a first-order logic knowledge base (KB) with clauses
KB = aima.logic.FolKB(clauses)
# Add rules and facts with tell
KB.tell(aima.utils.expr('Enemy(Coco, America)'))
KB.tell(aima.utils.expr('Enemy(Jojo, America)'))
KB.tell(aima.utils.expr("Enemy(x, America) ==> Hostile(x)"))
# Get information from the knowledge base with ask
hostile = KB.ask(aima.utils.expr('Hostile(x)'))
criminal = KB.ask(aima.utils.expr('Criminal(x)'))
# Print answers
print('Hostile?')
print(hostile)
print('\nCriminal?')
print(criminal)
print()
# Tell python to run main method
if __name__ == "__main__": main()
```