

## Lab 3 Part 3

### Task 4

$$1. \exists x \neg f(x) \rightarrow f(Terry)$$

$$2. \exists x \neg C(x, Terry) \rightarrow C(Rachel^{\text{of}}, Chelsea)$$

$$3. \exists x \neg C(x, Terry) \rightarrow C(Jan, Sharon)$$

$$4. \exists x \neg C(x, Terry) \rightarrow \exists x C(x, Bob)$$

$$5. \forall y (y \neq Joseph \rightarrow C(Sanjay, y))$$

$$6. \exists x \neg f(x)$$

$$7. \exists x \neg f(x)$$

$$8. \exists x (f(x) \wedge \forall y (f(y) \rightarrow y = x))$$

$$9. \exists ! x f(x)$$

$$10. \forall x (f(x) \rightarrow \exists y (C(x, y)))$$

$$11. \exists x (f(x) \wedge \forall y \neg C(x, y))$$

$$12. \exists x \exists y \neq x \neg C(x, y)$$

$$13. \exists x \forall y C(x, y)$$

$$14. \exists x \exists y (x \neq y \wedge \exists z (\neg C(x, z) \wedge \neg C(y, z)))$$

$$15. \exists x \exists y (x \neq y \wedge \forall z (C(x, z) \vee C(y, z)))$$