cs113 Lab3: By Amuldeep Dhillon

Text written to file build.sh

```
doctex lab.doc
pptexenv latex lab.tex
dvipdf lab.dvi
```

Bourne Shell

```
chmod 777 build.sh
./build.sh
```

cs113 Lab3: Conditional

p	q	$(p \rightarrow q)$
F	F	T
F	T	T
T	F	F
T	T	T

SML

```
val truthValues2 = [(false,false),(false,true),(true,false),(true,true)];
fun COND(false,q) = true | COND(true,q) = q;
map COND truthValues2;
val f1 = map COND truthValues2;
```

```
> val truthValues2 = [(false,false),(false,true),(true,false),(true,true)];
fun COND(false,q) = true | COND(true,q) = q;
map COND truthValues2;
val truthValues2 =
   [(false, false), (false, true), (true, false), (true, true)]:
   (bool * bool) list
> val COND = fn: bool * bool -> bool
> val it = [true, true, false, true]: bool list
```

cs113 Lab3: Conditional

- Use ttgen to show equivalence of
  $p \rightarrow q$ and $\neg p \vee q$

p	q	$(\sim p \vee q)$
F	F	T
F	T	T
T	F	F
T	T	T

p	q	$((p \rightarrow q) \leftrightarrow (\sim p \vee q))$
F	F	T
F	T	T
T	F	T
T	T	T

SML

$val\ truthValues2 = [(false,false),(false,true),(true,false),(true,true)];$

$fun\ COND(false,q) = true \mid COND(true,q) = q;$

```
> val truthValues2 = [(false,false),(false,true),(true,false),(true,true)];
fun COND(false,q) = true | COND(true,q) = q;
map COND truthValues2;
val truthValues2 =
   [(false, false), (false, true), (true, false), (true, true)]:
   (bool * bool) list
> val COND = fn: bool * bool -> bool
> val it = [true, true, false, true]: bool list
```

- $\sim (p \to q) \equiv p \wedge \sim q$

$$\begin{aligned} \sim (p \to q) &\equiv \sim ((\sim p) \vee q) \\ &\equiv (\sim (\sim p)) \wedge \sim q \\ &\equiv p \wedge \sim q \end{aligned} \tag{1}$$