

Homework 2

1.

P	Q	R	$P \wedge R \rightarrow Q$	$R \vee \sim Q$	$Q \rightarrow P$	$P \wedge Q \rightarrow R$
T	T	T	T	T	T	T
T	T	F	T	F	T	F
T	F	T	F	T	T	T
T	F	F	T	T	T	T
F	T	T	T	T	F	T
F	T	F	T	F	F	T
F	F	T	T	T	T	T
F	F	F	T	T	T	T

2. Hypothesis 1: $(\sim M \wedge C) \rightarrow \sim T$

Hypothesis 2: $\sim C \rightarrow (\sim M \vee \sim T)$

Conclusion: $M \rightarrow C$

M	C	T	$(\sim M \wedge C) \rightarrow \sim T$	$\sim C \rightarrow (\sim M \vee \sim T)$	$M \rightarrow C$
T	T	T	T	T	T
T	T	F	T	T	T
T	F	T	T	F	F
T	F	F	T	T	F
F	T	T	F	T	T
F	T	F	T	T	T
F	F	T	T	T	T
F	F	F	T	T	T

Question 1 - Code

```

1  # Question 1
2  hyps = [ 'p and (r <= q)', 'r or (not q)', 'q <= p' ]
3  concl = 'p and (q <= r)'
4
5  fst = "{0:^3s}|{1:^3s}|{2:^3s}|{3:^3s}|{4:^8s}|{5:^7s}|{6:^9s}|"
6  fst2 = "{0:^3d}|{1:^3d}|{2:^3d}|{3:^3d}|{4:^8d}|{5:^7d}|{6:^9d}|"
7  div = "-----+-----+-----+-----+-----+-----+-----"
8
9  print(fst.format('p','q','r','p& r->q','r| ~q','q -> p','p & q->r'))
10 for p in range(2):
11     for q in range(2):
12         for r in range(2):
13             print(div)
14             print(fst2.format(p,q,r, eval(hyps[0]),
15                               eval(hyps[1]), eval(hyps[2]),eval(concl)))

```

Question 1 - Output

```

(base) CJs-MacBook-Pro:~ cj_hess510$ python -u "/Users/cj_hess510/Desktop/MST Computer Science/CS 1200/homework1-part1.py"
p | q | r | p& r->q | r| ~q | q -> p | p & q->r |
-----+-----+-----+-----+-----+-----+-----
0 | 0 | 0 | 0 | 1 | 1 | 0 |
-----+-----+-----+-----+-----+-----+-----
0 | 0 | 1 | 0 | 1 | 1 | 0 |
-----+-----+-----+-----+-----+-----+-----
0 | 1 | 0 | 0 | 0 | 0 | 0 |
-----+-----+-----+-----+-----+-----+-----
0 | 1 | 1 | 0 | 1 | 0 | 0 |
-----+-----+-----+-----+-----+-----+-----
1 | 0 | 0 | 1 | 1 | 1 | 1 |
-----+-----+-----+-----+-----+-----+-----
1 | 0 | 1 | 0 | 1 | 1 | 1 |
-----+-----+-----+-----+-----+-----+-----
1 | 1 | 0 | 1 | 0 | 1 | 0 |
-----+-----+-----+-----+-----+-----+-----
1 | 1 | 1 | 1 | 1 | 1 | 1 |
(base) CJs-MacBook-Pro:~ cj_hess510$ 

```


Question 3 - Output

p	q	r	s	t	w	u	prem1	prem2	prem3	prem4	prem5	prem6	conclusion
0	0	0	0	0	0	0	1	0	1	1	1	1	0
0	0	0	0	0	0	1	1	0	1	1	1	1	0
0	0	0	0	0	1	0	1	0	1	1	1	1	0
0	0	0	0	0	1	1	1	0	1	1	1	1	1
0	0	0	0	1	0	0	1	0	0	1	1	1	0
0	0	0	0	1	0	1	1	0	0	1	1	1	0
0	0	0	0	1	1	0	1	0	0	1	1	1	0
0	0	0	0	1	1	1	1	0	0	1	1	1	1
0	0	0	1	0	0	0	1	1	1	1	0	1	0
0	0	0	1	0	0	1	1	1	1	1	0	1	0
0	0	0	1	0	1	0	1	1	1	1	0	1	0
0	0	0	1	0	1	1	1	1	1	1	0	1	1
0	0	0	1	1	0	0	1	1	1	1	0	1	0
0	0	0	1	1	0	1	1	1	1	1	0	1	0
0	0	0	1	1	1	0	1	1	1	1	0	1	0
0	0	0	1	1	1	1	1	1	1	1	0	1	1
0	0	1	0	0	0	0	1	1	1	1	1	0	0
0	0	1	0	0	0	1	1	1	1	1	1	1	0
0	0	1	0	0	1	0	1	1	1	1	1	0	0
0	0	1	0	0	1	1	1	1	1	1	1	1	1
0	0	1	0	1	0	0	1	1	0	1	1	0	0
0	0	1	0	1	0	1	1	1	0	1	1	1	0
0	0	1	0	1	1	0	1	1	0	1	1	0	0
0	0	1	0	1	1	1	1	1	0	1	1	1	1
0	0	1	1	0	0	0	1	1	1	1	0	0	0
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0	0	1	1	0	1	0	1	1	1	1	0	0	0
0	0	1	1	0	1	1	1	1	1	1	0	1	1
0	0	1	1	1	0	0	1	1	1	1	0	0	0
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0	0	1	1	1	1	0	1	1	1	1	0	0	0
0	0	1	1	1	1	1	1	1	1	1	0	1	1
0	1	0	0	0	0	0	1	0	1	0	1	1	0
0	1	0	0	0	0	1	1	0	1	0	1	1	0

1	0	1	1	1	0	1	0	1	1	1	0	1	0	
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1	0	1	1	1	1	1	0	1	1	1	0	1	1	
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1	1	1	1	0	0	0	1	1	1	1	0	1	0	
1	1	1	1	0	0	1	1	1	1	1	0	1	0	
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1	1	1	1	1	0	0	0	1	1	1	1	0	1	
1	1	1	1	1	0	0	1	1	1	1	0	1	0	
1	1	1	1	1	0	1	0	1	1	1	0	1	1	
1	1	1	1	1	1	0	0	1	1	1	1	0	1	
1	1	1	1	1	1	0	1	1	1	1	0	1	0	
1	1	1	1	1	1	1	0	1	1	1	0	1	0	
1	1	1	1	1	1	1	1	1	1	0	1	1	1	

(base) C:\MacBook-Pro> cd base5106