Assignment 1

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CSC354 - Assignment 1 - ML - Concept learning
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Q NO. 1:

using Candidate-elimination Algorithm:

origin	Manufacturer	color	Decade	Type	Target
Japan	Honda	Blue	1980	Economy	+
Japan	Toyota	Green	1970	sport	-
Japan	Toyota	Blue	1990	Economy	+
USA	Chyler	Red	1980	Economy	-
Japan	Honda	white	1980	Economy	+

start:

$S_0 < \phi, \phi, \phi, \phi, \phi >$

$G_0 < ?, ?, ?, ?, ? >$

At instance 1:

$S_1 <$ Japan, Honda, Blue, 1980, Economy $>$

$G_1 < ?, ?, ?, ?, ? >$

At instance 2:

$S_2 <$ Japan, Honda, Blue, 1980, Economy $>$

$G_2 <$ USA, ?, ?, ?, ? $>$, $<$?, Honda, ?, ?, ? $>$, $<$?, Chryler, ?, ?, ? $>$
$<$?, ?, Blue, ?, ? $>$, $<$?, ?, Red, ?, ? $>$, $<$?, ?, white, ?, ? $>$,
$<$?, ?, ?, 1980, ? $>$, $<$?, ?, ?, 1990, ? $>$, $<$?, ?, ?, ?, Economy $>$

At instance 3:

$S_3 < Japan, ?, Blue, ?, Economy >$

$G_3 < ?, ?, Blue, ?, ? >, < ?, ?, ?, 1990, ? >, < ?, ?, ?, ?, Economy >$

At instance 4:

$S_4 < Japan, ?, Blue, ?, Economy >$

$G_4 < ?, ?, Blue, ?, ? >, < ?, ?, ?, 1990, ? >, < Japan, ?, ?, ?, Economy >$

At instance 5:

~~$S_5 < Japan, ?, Blue, ?, Economy >$~~

$G_5 < Japan,$

$S_5 < Japan, ?, ?, ?, Economy >$

$G_5 < Japan, ?, ?, ?, Economy >$

So,

hypothesis is $< Japan, ?, ?, ?, Economy$

Q No. 2:

Apply Find-S Algorithm:

Data:

Eye	Face	Mouth	Hair	Nose	output
Circle	Circle	up	Yes	Triangle	Happy (+)
Square	Square	Down	Yes	Square	Sad (-)
Square	Circle	up	Yes	Triangle	Happy (+)
Circle	Circle	Down	No	Triangle	Sad (-)
Square	Circle	up	Yes	Square	Happy (+)

Take on + examples:

$h_0 < \phi, \phi, \phi, \phi, \phi, \phi >$

At instance 1:

$h_1 <$ circle, circle, up, yes, Triangle $>$

At instance 3:

$h_2 <$?, circle, up, yes, Triangle $>$

At instance 5:

$h_3 <$?, circle, up, yes, ? $>$

So, final is $<$?, circle, up, yes, ? $>$