

Given this hypothesis for the concept Bird, answer the questions below.

**Bird = WarmB & LaysE & Flies**

**1) (2 pts)** Given the above hypothesis for the concept **Bird**, chose the best description of the example  $f(\text{Robin}: \text{WarmB} \& \text{LayE} \& \text{Fly}) = \text{Bird}$ :

- a) True Positive ✓
- b) True Negative
- c) False Positive
- d) False Negative

**2) (2 pts)** Chose the best description for the example  $f(\text{Pteranodon}: \text{ColdB} \& \text{LayE} \& \text{Fly}) = \text{Reptile}$ :

- a) True Positive
- b) True Negative ✓
- c) False Positive
- d) False Negative

**3) (2 pts)** Chose the best description for the example  $f(\text{Platypus}: \text{WarmB} \& \text{LayE} \& \neg \text{Fly}) = \text{Mammal}$ :

- a) True Positive
- b) True Negative ✓
- c) False Positive
- d) False Negative

**4) (2 pts)** Chose the best description for the example  $f(\text{Ostrich}: \text{WarmB} \& \text{LayE} \& \neg \text{Fly}) = \text{Bird}$ :

- a) True Positive
- b) True Negative
- c) False Positive
- d) False Negative

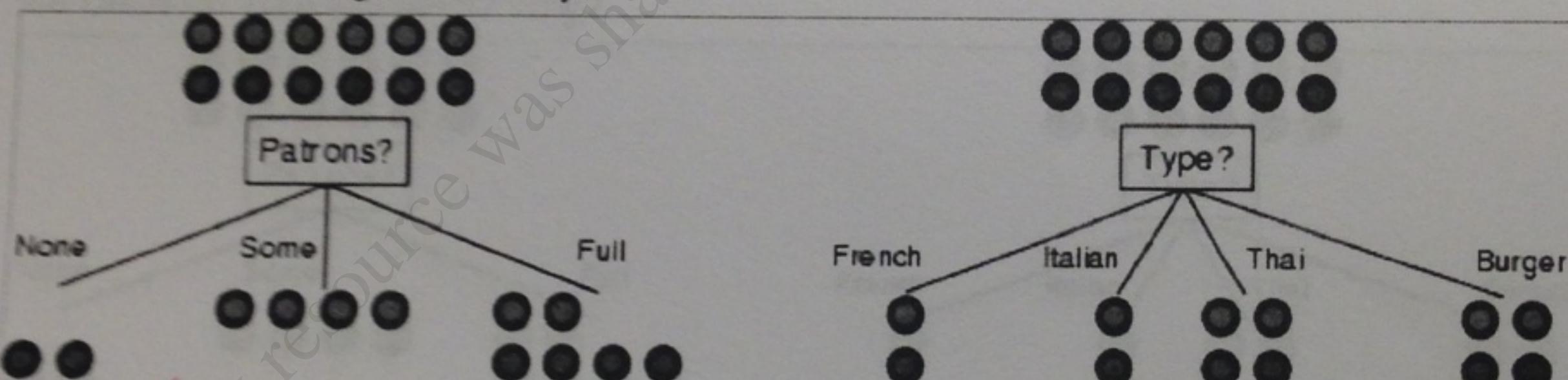
**5) (2 pts)** Chose the best description for the example  $f(\text{Bat}: \text{WarmB} \& \neg \text{LayE} \& \text{Fly}) = \text{Mammal}$ :

- a) True Positive
- b) True Negative ✓
- c) False Positive
- d) False Negative

Given these examples from the Restaurant domain, answer the questions below:

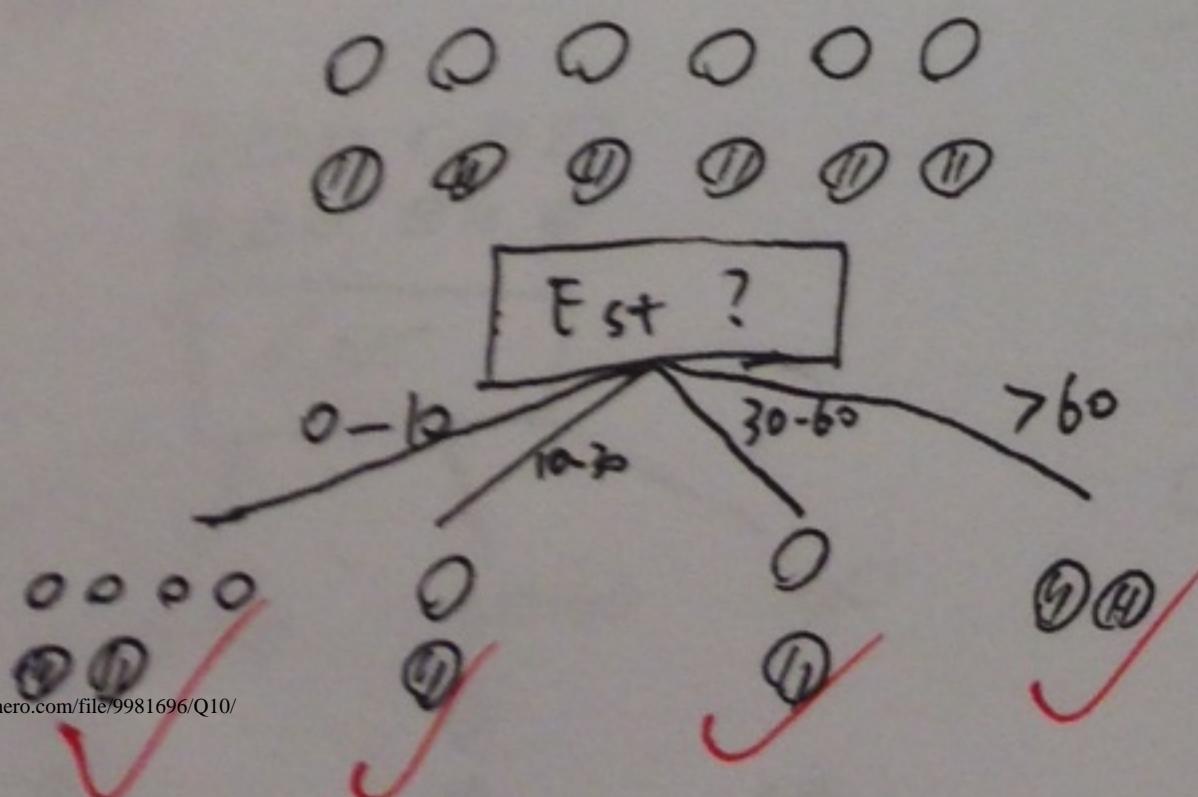
Example	Attributes											Target Wait
	Alt	Bar	Fri	Hun	Pat	Price	Rain	Res	Type	Est		
X <sub>1</sub>	T	F	F	T	Some	\$\$\$	F	T	French	0-10	T	
X <sub>2</sub>	T	F	F	T	Full	\$	F	F	Thai	30-60	F	
X <sub>3</sub>	F	T	F	F	Some	\$	F	F	Burger	0-10	T	
X <sub>4</sub>	T	F	T	T	Full	\$	F	F	Thai	10-30	T	
X <sub>5</sub>	T	F	T	F	Full	\$\$\$	F	T	French	>60	F	
X <sub>6</sub>	F	T	F	T	Some	\$\$	T	T	Italian	0-10	T	
X <sub>7</sub>	F	T	F	F	None	\$	T	F	Burger	0-10	F	
X <sub>8</sub>	F	F	F	T	Some	\$\$	T	T	Thai	0-10	T	
X <sub>9</sub>	F	T	T	F	Full	\$	T	F	Burger	>60	F	
X <sub>10</sub>	T	T	T	T	Full	\$\$\$	F	T	Italian	10-30	F	
X <sub>11</sub>	F	F	F	F	None	\$	F	F	Thai	0-10	F	
X <sub>12</sub>	T	T	T	T	Full	\$	F	F	Burger	30-60	T	

- 1) (5pts) Which one of these two attributes, **Patrons** or **Type?** would be chosen first by the Decision Tree algorithm? Why?



**Patrons.** Because information remaining after decision with patron is less than that with type. Which means, we need to apply other attributes to decide for all four partitions after type, (French, Italian, Thai & Burger), but we only

- 2) (5pts) Draw a graph similar to the ones in problem 1 for the attribute **Est.** for the wait time estimate. Would the Decision Tree algorithm choose **Est.** before **Patrons?** before **Type?**



After **Patrons**.

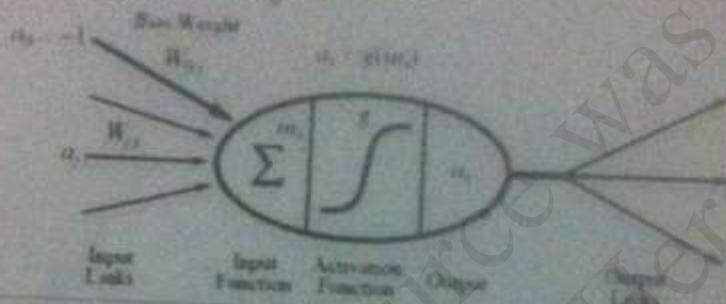
Before **Type**.

Name: Maysad T  
Student ID:  
Student email:

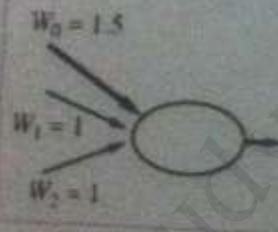
Washington Secondary  
CBEST Computer Test  
(Q10)

Given this diagram of a perceptron, answer the questions below.

$$a_0 \leftarrow g(m_0) = g\left(\sum_j W_{j,0} a_j\right)$$



1) (5pts) Which boolean function does the below perceptron represent? Explain how.

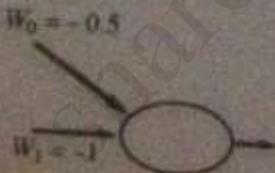


The function is AND.

For inputs  $a_0, a_1, a_2$ : ( $\rightarrow$  maps to boolean value)

$a_0$	$a_1$	$a_2$	$\Sigma w_i a_i$	
-1	0	0	0.5 $\rightarrow$ F	
-1	0	1	-0.5 $\rightarrow$ F	
-1	1	0	-0.5 $\rightarrow$ F	
-1	1	1	0.5 $\rightarrow$ T	

2) (5pts) Which boolean function does the below perceptron represent? Explain how.



The function is ~~NOT~~ NOT.

For inputs  $a_0, a_1$ : ( $\rightarrow$  maps to boolean value)

$a_0$	$a_1$	$\Sigma w_i a_i$	
-1	0	0 $\rightarrow$ F	
-1	1	-1 $\rightarrow$ F	
1	0	-1 $\rightarrow$ F	