IT351 Assignment 2

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TOPIC: HICK HYMAN’S LAW

NOTE: The code for this assignment has not been attached as per the guidelines given. The screenshots of the app created have been included in this document.

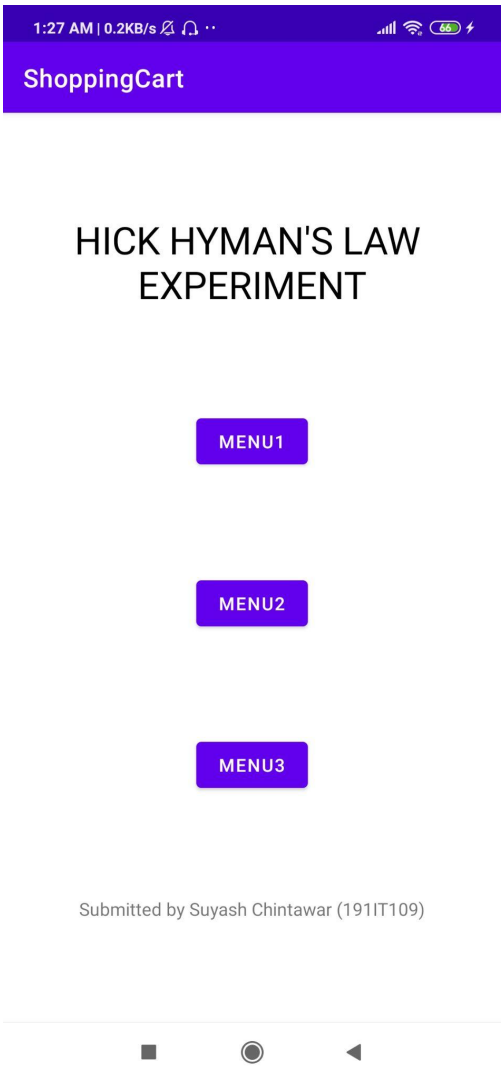
Hick Hyman's law:
Hick Hyman's law states that the reaction time that the user takes to decide amongst a number of options is directly proportional to the logarithm of the number of options available.

The formula is given by,
RT = a + b*log(n)
Where,
a,b = constants
RT = reaction time
n = number of options available

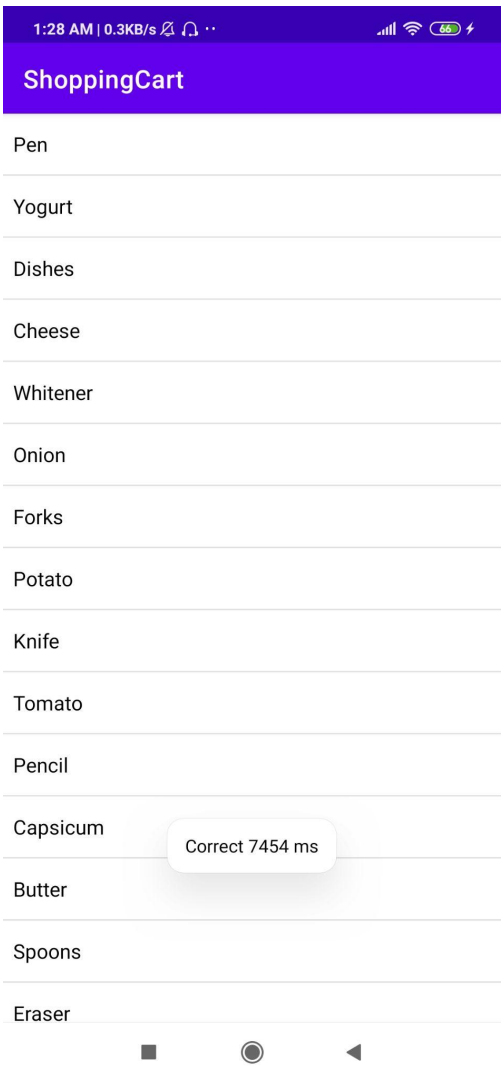
log(n) is also called the entropy(H) if the probability of selecting any of the options is the same.

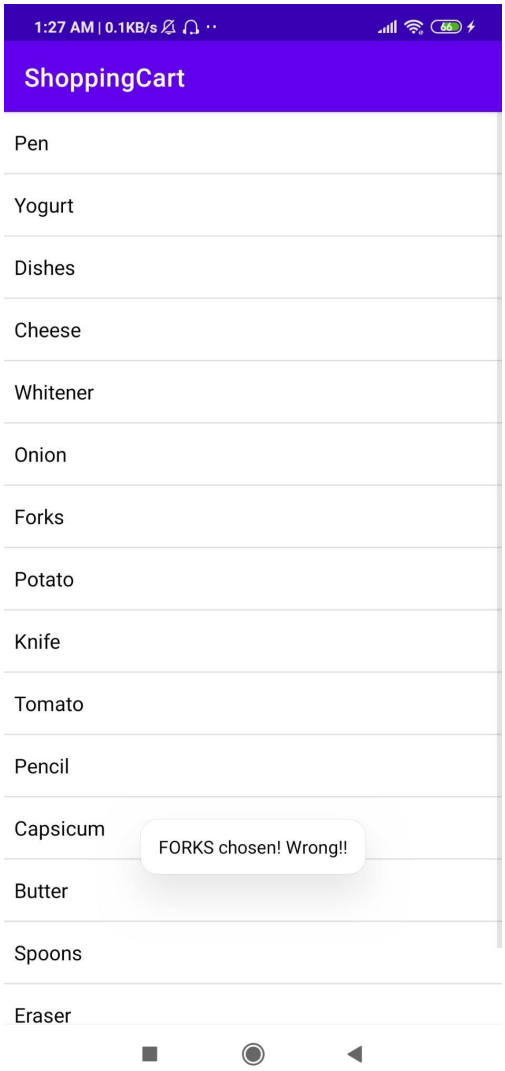
The Experiment:
1) Three different menu structures have been designed on a mobile interface to simulate the working of Hick Hyman's law.
2) After choosing a menu, the user will be shown a randomly chosen target string that the user needs to search in the menu.
3) In the menu, the list of available choices will be shown in any random order.
4) Once the user chooses the correct target that was expected the time recorded by the user to make this decision is shown in a Toast in milliseconds.
5) If a wrong choice is chosen, the user can continue until the correct choice is selected.

Screenshots and Working of the app:

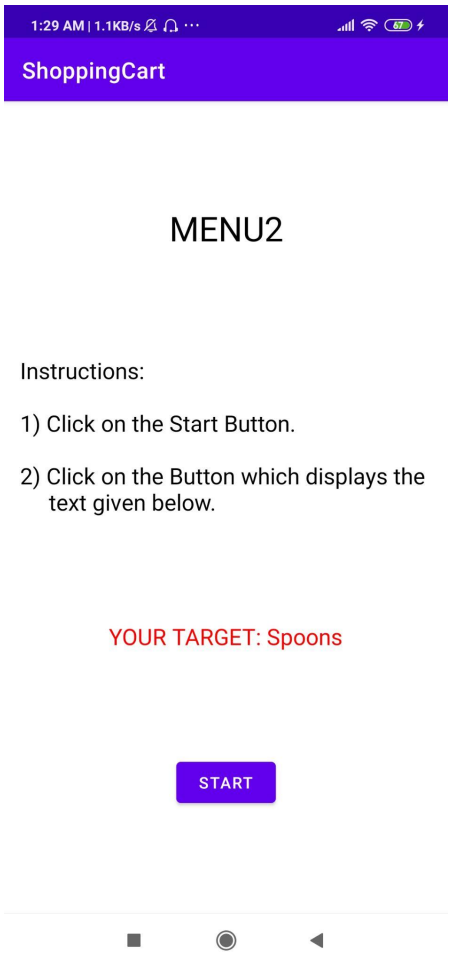


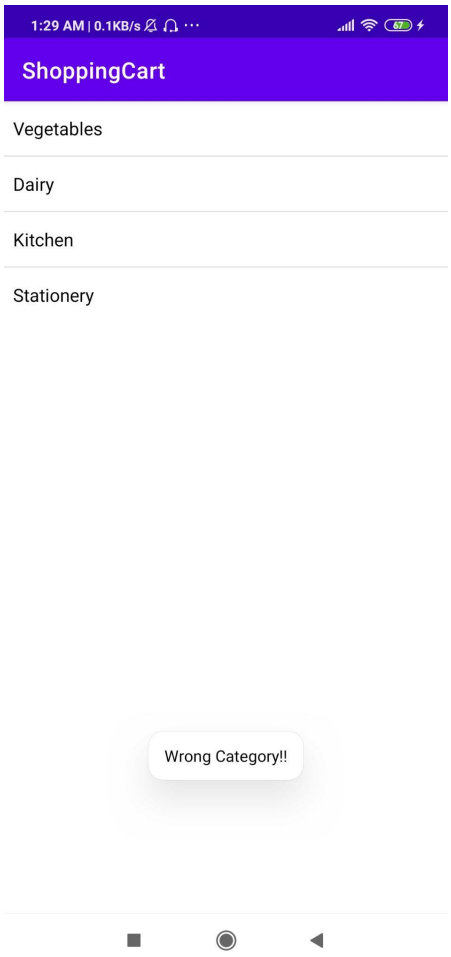
The above image shows the homepage of the android app where the user can navigate between any of the three menus. The image on the right is the page that appears when the user selects MENU1. The target text has been displayed in red color.

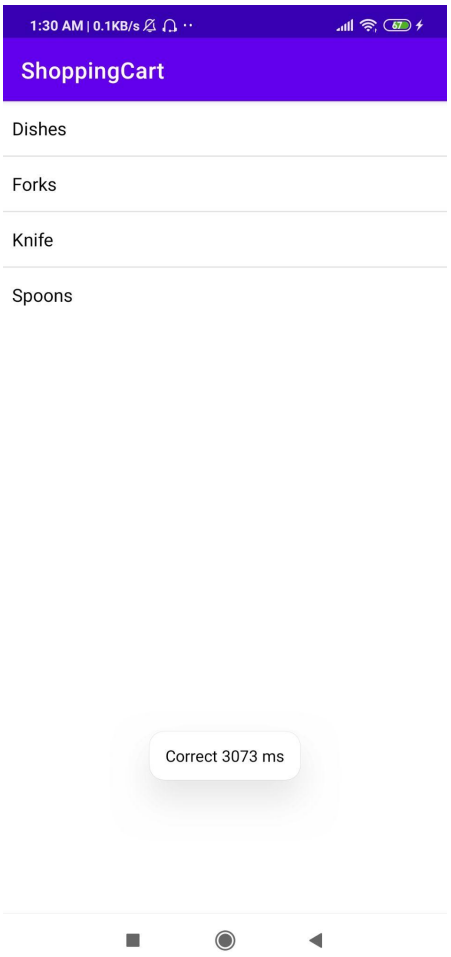




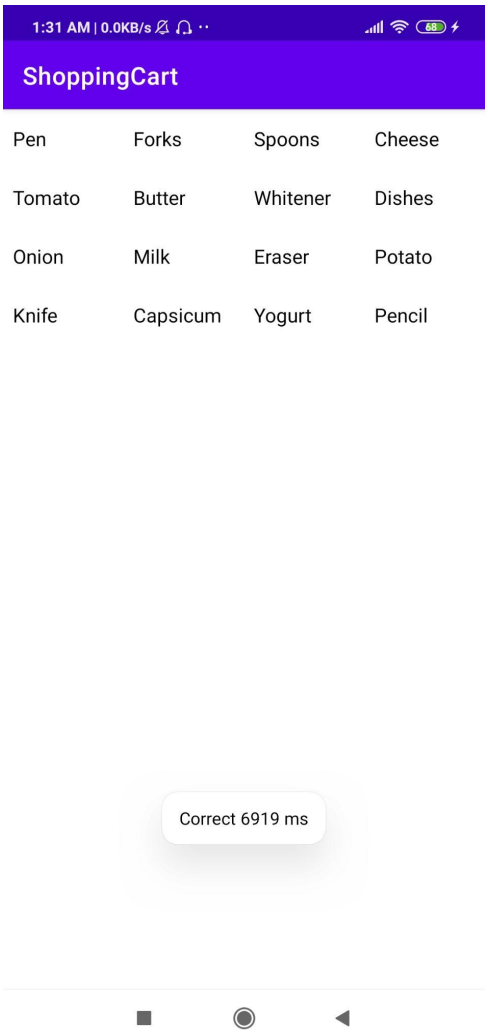
MENU1 contains a list of items. If the user chooses the correct choice, the time required for the decision is displayed in milliseconds. If the chosen choice is wrong the corresponding toast is displayed.







If the user chooses MENU2, The user can choose between 4 choices under which there are 4 different sub choices. When the user selects the correct sub choice, toast will be displayed with the time taken in milliseconds.



The above images show MENU3, which has the same basic idea as MENU1 and MENU2.

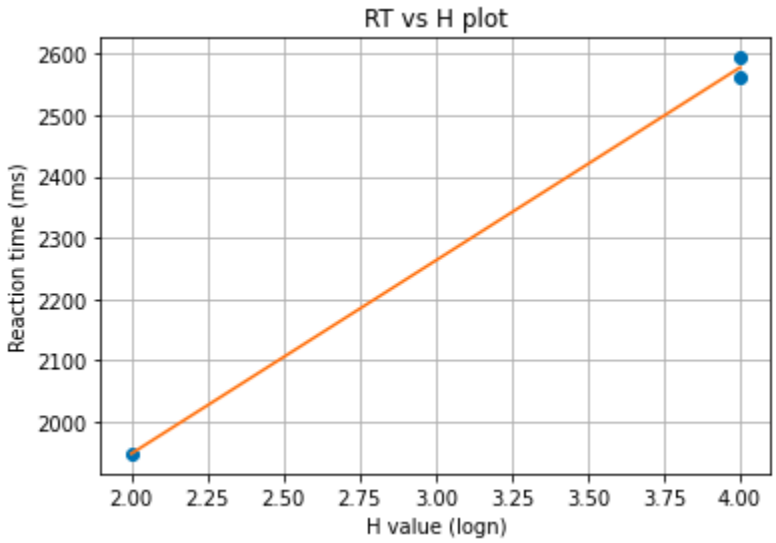
The recorded times taken **in milliseconds** for 10 trials across the three menus has been tabulated in the table below.

	Trial1	Trial2	Trial3	Trial4	Trial5	Trial6	Trial7	Trial8	Trial9	Trial10
Menu1	7454	3335	2243	2005	1618	2330	2166	1506	1572	1713
Menu2	3073	1703	1732	1754	1938	2107	1515	1436	1720	2499
Menu3	6919	1363	1285	2334	2495	3123	1861	2302	2005	1934

Average Time in case of:

1) MENU1 : 2594.2 milliseconds => n = 16
2) MENU2 : 1947.7 milliseconds => n = 4
3) MENU3 : 2562.1 milliseconds => n = 16

Graph of RT vs H:



Observations and Conclusions:

The plot shows that as the entropy increases, the reaction time also increases. Alternatively, as the number of available options increases, the time taken to make a decision also increases. This is also proved by the formula that entropy is directly proportional to the reaction time.

THANK YOU