CS3200: Computer Networks

Lab7 - Slotted Aloha

CS14B050 - Rachit Garg

Introduction

Slotted Aloha protocol was implemented in this assignment. The window size was dynamically updated every time a successful transmission or a collision took place.

The output of some programs and observations were as follows.

Experiment

A shell script was written in python and the output received was used to plot a graph between probability and effective throughput. This was done for the two cases where window size was two and four respectively.

Observations

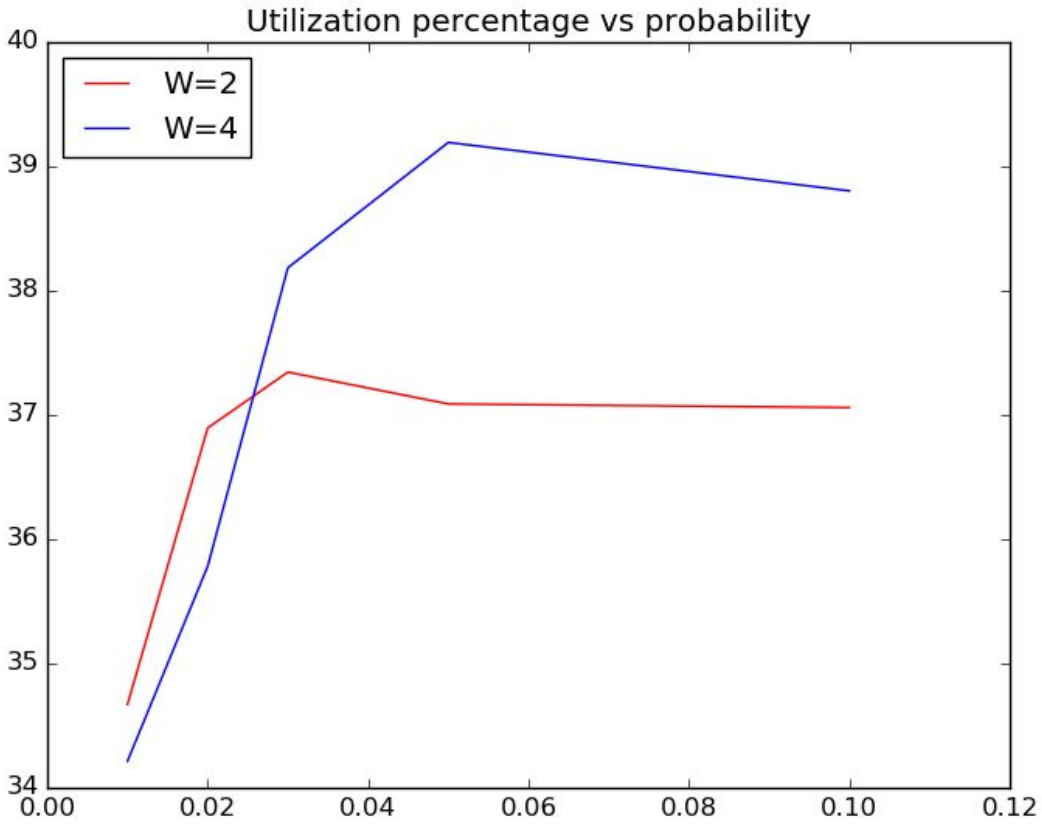
Table for effective throughput

Generate Probability/Window_Size	Window_Size - 2	Window_Size - 4
Generate Probability - 0.01	0.348	0.342
Generate Probability - 0.02	0.369	0.358
Generate Probability - 0.03	0.372	0.382
Generate Probability - 0.05	0.371	0.394

Generate Probability - 0.1	0.370	0.387

We observe that the throughput increases as the probability increases and after a threshold throughput starts to drop if probability increases further.

The graph obtained was as follows



The observations were recorded for 50 uses with two window sizes, size 2 and size 4.

We observe from the graph that for smaller window size the throughput is better when probability of generation is low. As a low generation probability means lower collisions and in that case a lower window size results in less waiting in case a collision occurs, hence a higher throughput. While a high generation probability means that more are the collisions hence in that case a small window size would mean repeated collisions, hence a higher window size performs better in this case.

README

The command line arguments are followed as in the question.

Type make to compile the scripts.

To run python script type: python graph.py

For running script: scriptreplay --timing=time.txt script.log