University of Central Florida

Department of Computer Science

CDA 5106: Fall 2020

Machine Problem 3: Dynamic Instruction Scheduling

by

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Honor Pledge: "I have neither given nor received unauthorized aid on this test or assignment."

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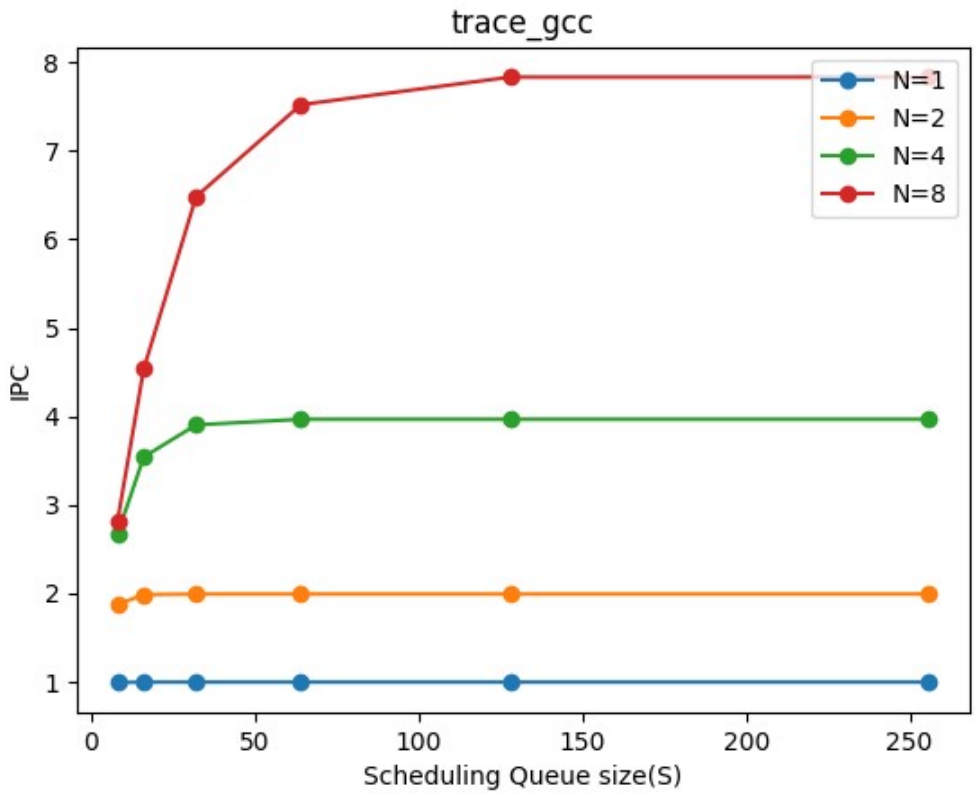
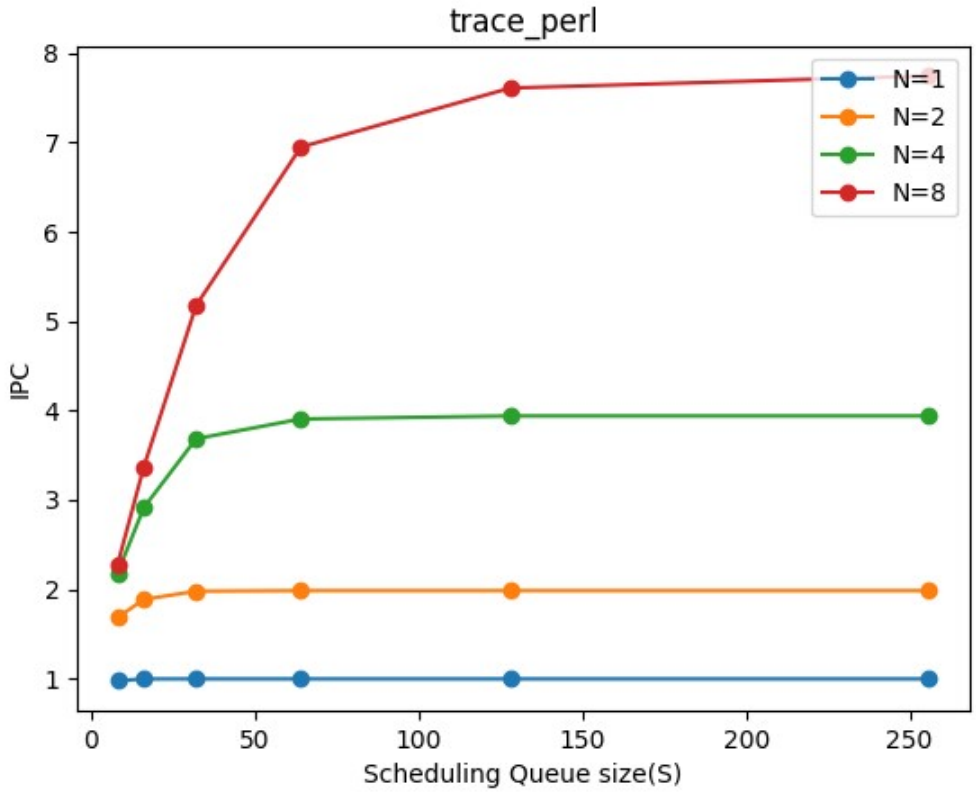
(sign by typing your name)

1. Graph for gcc



Graph for perl



2. To answer this question, for each trace files, for each value of N, I multiplied the value of IPC for S=256 with 0.95 and checked the minimum S that gives us that number.

Optimized Scheduling Queue size per peak Fetch Rate		
	Benchmark = gcc	Benchmark = perl
N=1	8	8
N=2	16	16
N=4	32	64
N=8	64	128

3. Discussion:

A)

When the N is low (1,2,4), increasing the value of S does not have that much effect on IPC. For N=8 however we can see that increasing the value of S changes the IPC dramatically, but it does not go above a certain threshold. So, we can confidently say that increasing the Scheduling queue size(s) is not that helpful after certain threshold.

B)

With different benchmark (trace) files, IPC values can differ probably because of having instructions that were not able to execute out of order. Which can be caused by them being located nearby, having some kind of data dependencies etc.