

Please carefully read the following instructions before attempting the assignment Solution.

NOTE

Don't copy-paste the same answer.

Make sure you can make some changes to your solution file before submitting copy paste solution will be marked zero.

If you found any mistake then correct yourself and inform me.

Before submitting an Assignment GDB checks your activity requirement file.

For any query, feel free to Contact at
WhatsApp: +923074960034

Provide by **M.JUNAID QAZI**

Question No. 1

Amdahl's Law predicts the potential speed increase in completing a task with improved system resources while keeping the workload constant. Suppose you are working on a task where the ratio of sequential code and number of processors is doubled. Use Amdahl's Law to prove that the speed-up does not remain the same by considering the following conditions.

- Initial fraction of code that can be executed sequentially = 10%
- The initial number of processors = 200
- Assumes zero (0) overhead and "perfect" parallelism.

Note: Students will have to apply the given Amdahl's Law on the initial values and after that doubling the values.

Amdahl's Law:

$$S \leq \frac{1}{f + (1 - f)/N}$$

Solution:

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Initial Scenario:

Fraction of sequential code (f) = 0.1

Number of processors (N) = 200

Applying Amdahl's Law:

Speedup (S) = $1 / (f + ((1 - f) / N))$

$S = 1 / (0.1 + ((1 - 0.1) / 200))$

$S = 1 / (0.1 + ((0.9) / 200))$

$S = 1 / (0.1 + 0.0045)$

$S = 1 / (0.1045)$

$S \approx 9.56$

Doubling Resources:

New fraction of sequential code (f') = 0.2 (doubled)

New number of processors (N') = 400 (doubled)

Applying Amdahl's Law again:

New speedup (S') = $1 / (f + ((1 - f) / N))$

$S = 1 / (0.2 + ((1 - 0.2) / 400))$

$S = 1 / (0.2 + ((0.8) / 400))$

$S = 1 / (0.2 + 0.002)$

$S = 1 / (0.202)$

$S \approx 4.95$

Question No. 2**Solution:****Bitmap Index Table for "Specialization":**

Specialization	Bitmap					
	STD001	STD002	STD003	STD004	STD005	STD006
WEB DEVELOPMENT	1	0	0	0	0	0
MANAGEMENT	0	1	0	0	1	1
PROGRAMMING	0	0	1	1	0	0
NETWORKING	0	0	0	1	0	0

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Bitmap Index Table for "Degree Program":

Degree Program	Bitmap					
	STD001	STD002	STD003	STD004	STD005	STD006
MIT	1	0	1	1	0	0
MBA	0	1	0	0	0	1
MCS	0	0	0	0	1	0

Every Assignment and GDB is change due to unique Student ID so don't copy

That is truly perfect step by step idea solution get help easily.

Wish you the very best of Luck!

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