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| Parallel and Distributed Computing ( 6E / 6F )  Quiz 06 (Spring 2022). Instructor: Dr. Syed M. Irteza | | Name: ***SOLUTION*** |
| Date: 2022-06-01 | | Roll Number: |
| Total Marks: 15 | Time Allowed: 10 mins |

1. If I know the size of the message (e.g., 10 Megabits), and I know the number of hops (e.g., 5), as well as the startup time at the source (e.g., 100msec), what other pieces of information do I need to know for calculating the total time taken for data transfer of this message? Please write an expression for this as well (using the information given above). [6m]

*We know m (10Mb), we know n (5), and we also know ts (0.1sec).*

*We need to know:*

*tw (bandwidth)*

*th (Arrival latency, or propagation delay)*

*tr (receiver handling time)*

*t = ts + (tw\*m + th + tr)\*n*

*t = 0.1 + (tw\*10\*106 + th + tr) \* 5*

*(We will expect the value tw in terms of bits per second, bps)*

1. What was the use case for grid computing that made it unique from other forms of distributed computing? [2m]

*Solution of Scientific Problems (refer to slide 18, Lecture 23)*

1. Can we say that middleware is an alternative for a network OS? [4m]

*No. Middleware normally works on top of network OS services, thus they are not alternatives for each other (refer to slides 24-25, Lecture 24).*

1. What kind of application would suit a peer-to-peer architecture? [3m]

*Where centralized servers would make the application response time very high.*

*Appropriate for applications like:*

*Instant messaging,*

*Peer-to-peer file transfers,*

*Video conferencing, and*

*Collaborative work*

*(Refer to slide 14, Lecture 24)*