Name: Date:

9618 FILL IN THE BLANKS: PARALLEL PROCESSING

Select the correct term from the Answer Bank box below and drag & drop it into the blank column space provided.

Massively Parallel	graphics processing units (GPUs)	complexity	asynchronous	pipelining
supercomputers	array processing	matrix mathematics	SISD	MIMD
distributed memory	synchronous	data dependency	Von Neumann	multi-core processors
interconnect network	MISD	compiler	data stream	memory sharing
autonomous microprocessors	fault tolerance	instruction stream	instruction stream	single processor

No	Question description	DROP answer here
1	The traditional, non-parallel computer model that processes one instruction on a single piece of data at a time is classified as a ____architecture.	
2	The _____ model serves as the structural foundation for SISD architecture, utilizing a single control unit and one arithmetic logic unit connected to a shared memory block.	
3	The acronym "SIMD" explicitly stands for Single Instruction, Multiple _____	
4	Architectures implementing SIMD are highly efficient at handling multimedia tasks because a single ___ can be broadcast simultaneously to many separate processing cells.	
5	Modern computer hardware architectures like ____ rely heavily on SIMD principles to rapidly alter millions of screen pixels simultaneously.	
6	A major benefit of SIMD systems is their native support for ___, allowing identical arithmetic loops to execute across large grids of values in one step.	
7	The core of SIMD architecture is inherently___, meaning all execution nodes wait for the control unit to dispatch the next instruction before moving forward together.	
8	The rarest and most theoretically restrictive architecture in Flynn's classification scheme is __, which passes a single data point through multiple independent operations.	
9	The primary real-world application of MISD computing centers on providing critical redundancy and ___ in mission-critical environments such as flight navigation systems.	
10	MISD systems can be effectively simulated in multi-stage hardware systems by applying different mathematical operations to a shared dataset using an advanced form of data ___.	
11	The architecture that defines true modern multi-tasking parallel processing by handling multiple independent instruction sets over diverse concurrent datasets is known as___	
12	Commercial consumer computer chips today operate as MIMD environments through the physical layout of ___housed on a individual silicon die.	
13	Unlike SIMD, processing nodes within a MIMD configuration function in an entirely ___ manner, executing their own independent subroutines at varying execution __paces.	
14	A key structural challenge when developing a MIMD system is managing complex ___ strategies, ensuring separate cores do not corrupt or conflict over shared__ variables.	
15	A clear drawback of SISD processors compared to any parallel processing alternative is the strict upper performance boundary imposed by its dependency on a _____ core.	
16	An advantage of a SIMD chip over a MIMD chip is reduced structural ___ because it needs only a single central instruction decoder rather than duplicating decoders on every core.	
17	A limitation of SIMD occurs when application source code cannot be easily formatted into uniform calculations, rendering its massive parallel ____ arrays completely idle.	
18	A drawback of MIMD setup is programmers must carefully write code to prevent any ___ errors, where one core stalls waiting for an output that another core hasn't produced yet.	
19	The full potential of MIMD hardware execution paths, software engineers must rely on a highly sophisticated __to safely partition and distribute standard high-level language oops.	
20	While highly flexible, MIMD consume more power and require intricate cooling device due to the high physical transistor count required to run full, independent ___ decoders on all.	
21	A specialized scaling architecture that links thousands of complete, individual CPU nodes together to collaborate on massive, unified computations is known as a ___ Computer.	
22	Massively parallel computers are typically utilized as high-end ____ to handle complex scientific models such as advanced weather tracking or molecular simulation.	
23	Unlike basic multi-core setups that share local RAM chips, massively parallel designs utilize a ___ framework where each individual node has its own isolated memory system.	
24	To pass data packets across these thousands of isolated processing clusters, massively parallel computers depend on a high-speed, structural physical ___.	
25	A massive bottleneck of these giant systems is the extreme software complexity involved in coordinating thousands of completely ___ simultaneously without bus traffic gridlocks.	

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