



UNIVERSITÀ DEGLI STUDI DI MILANO

CONCORSO PUBBLICO, PER TITOLI ED ESAMI, A N. 1 POSTO DA DIRIGENTE DI SECONDA FASCIA A TEMPO INDETERMINATO PRESSO L'UNIVERSITÀ DEGLI STUDI DI MILANO, CON PRIMO INCARICO PRESSO LA DIREZIONE ICT - CODICE 22404

I/Le Componenti della Commissione giudicatrice del concorso codice 22404, nominata con Determina Direttoriale n. 8632/2024:

Prof.ssa Silvana Castano	<i>Presidente</i>
Dott. Giuliano Pozza	<i>Componente</i>
Dott. Fabrizio Pedranzini	<i>Componente</i>
Dott.ssa Silvia Leoni	<i>Segretaria</i>

comunica i quesiti relativi alla prova orale e volti all'accertamento del possesso delle competenze tecniche:

GRUPPO DI QUESITI N. 1

- 1.** Descrivere l'impatto sulla sostenibilità derivante dall'uso delle tecnologie AI e le possibili policy applicabili per limitarne gli effetti [*tempo a disposizione: 10 min*]
- 2.** Descrivere l'approccio metodologico e l'impostazione di un progetto per la realizzazione di un sistema di cruscotti a supporto della governance di Ateneo [*tempo a disposizione: 10 min*]

Brano in inglese, da leggere e tradurre

NoSQL (pronounced "no sequel") stands for Not Only SQL, or Non-SQL, and refers to non-relational databases. While SQL itself is a query language that communicates with databases, NoSQL is an adjective used to describe a non-relational database that doesn't require the SQL language.

NoSQL databases emerged in the late 1990s to handle big data that could have differing structures – an area where relational databases fell short. In a NoSQL database, you can store unstructured data across multiple servers and processing nodes. Because non-relational databases don't require fixed table schemas, they can not only store structured data but also semi-structured and unstructured data. This makes them easier to scale and manage, especially for organizations with massive data storage needs.

Some examples of NoSQL databases include MongoDB, RavenDB, Cassandra, BigTable, and CouchDB.

Modern programming is often iterative, meaning that programmers gradually add to a database or application over time. An iterative programming approach can be a challenge when using SQL servers because of their fixed schema structure. This makes it time-consuming to add to or change the structure of the data and records in a SQL database.

NoSQL databases are more flexible and compatible with iterative programming. Because defining schemas isn't necessary at the start and NoSQL databases can handle more than one type of data, programmers can add or change the structure of data and records as they go. These minor changes don't disrupt the entire system or require large data transfers.

GRUPPO DI QUESITI N. 2

- 1.** Descrivere le implicazioni e le possibili criticità in merito al trattamento di dati personali derivanti dall'adozione di piattaforme AI ed indicare possibili interventi di mitigazione [*tempo a disposizione: 10 min*]
- 2.** Descrivere i principi del service management secondo ITIL e l'applicazione del framework al supporto multilivello offerto agli utenti [*tempo a disposizione: 10 min*]



Brano in inglese, da leggere e tradurre

REST (representational state transfer) is a software architectural style that was created to guide the design and development of the architecture for the World Wide Web. REST defines a set of constraints for how the architecture of a distributed, Internet-scale hypermedia system, such as the Web, should behave. The REST architectural style emphasises uniform interfaces, independent deployment of components, the scalability of interactions between them, and creating a layered architecture to promote caching to reduce user-perceived latency, enforce security, and encapsulate legacy systems.

REST has been employed throughout the software industry to create stateless, reliable web-based applications. An application that adheres to the REST architectural constraints may be informally described as RESTful, although this term is more commonly associated with the design of HTTP-based APIs and what are widely considered best practices regarding the "verbs" (HTTP methods) a resource responds to while having little to do with REST as originally formulated—and is often even at odds with the concept.

The term representational state transfer was introduced and defined in 2000 by computer scientist Roy Fielding in his doctoral dissertation. It means that a server will respond with the representation of a resource (today, it will most often be an HTML, XML or JSON document) and that resource will contain hypermedia links that can be followed to make the state of the system change. Any such request will in turn receive the representation of a resource, and so on.

GRUPPO DI QUESITI N. 3

1. Descrivere le implicazioni dell'AI Act sull'impiego delle tecnologie AI nella progettazione e sviluppo dei servizi ICT [tempo a disposizione: 10 min]
2. Descrivere l'impatto sul ciclo di vita di un progetto SW degli aspetti di sicurezza dei servizi ICT [tempo a disposizione: 10 min]

Brano in inglese, da leggere e tradurre

Once upon a time APIs were coded manually, but today APIs are typically developed using API management software. API management is the process of creating and publishing APIs, enforcing their usage policies, controlling access, nurturing the developer community, collecting and analyzing usage statistics, and reporting on performance.

An API management platform has several components:

- *Developer tools – This is the interface that developers use to define APIs, test and debug them, generate documentation, govern API usage through access and usage policies, and deploy APIs into production, staging, and quality assurance environments. Often these developer tools include a visual development environment that helps developers generate code quickly and lets multiple developers collaborate on a project.*
- *Gateway – To handle the data exchange, an API management platform employs a server to authorize requests, pass them to back-end services, and pass responses back to the requester. It provides loose coupling between the client applications and the organization's resources, which never directly interact. The gateway is in charge of maximizing API efficiency and minimizing downtime. In the process the gateway can collect auditing and analytics data.*
- *Reporting and analytics – Any organization running an API management platform needs to know how the platform is running. An API management tool should provide a dashboard to monitor and report on API usage and load, including statistics about overall hits, completed transactions, number of data objects returned, amount of compute time and other internal resources consumed, and volume of data transferred. With collected performance data, the platform may provide reports so that administrators can analyze historical data to show usage trends. Reporting data can also help the API provider optimize API performance.*



GRUPPO DI QUESITI N. 4

- 1.** Descrivere i possibili impieghi delle tecnologie AI nel contesto universitario ed indicare i principali casi d'uso nello sviluppo dei servizi ICT [*tempo a disposizione: 10 min*]
- 2.** Descrivere l'articolazione di un piano complessivo per la messa in sicurezza dei servizi ICT dell'Ateneo [*tempo a disposizione: 10 min*]

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Agile methodology is a project management framework that breaks projects down into several dynamic phases, commonly known as sprints.

The Agile framework is an iterative methodology. After every sprint, teams reflect and look back to see if there was anything that could be improved so they can adjust their strategy for the next sprint.

The Agile Manifesto is a document that focuses on four values and 12 principles for Agile software development. It was published in February 2001 by 17 software developers who needed

As outlined in the Agile Manifesto, there are four main values of Agile project management:

- Individuals over processes and tools: Agile teams value team collaboration and teamwork over working independently and doing things "by the book."*
- Working software over comprehensive documentation: The software that Agile teams develop should work. Additional work, like documentation, is not as important as developing good software.*
- Customer collaboration over contract negotiation: Customers are extremely important within the Agile methodology. Agile teams allow customers to guide where the software should go. Therefore, customer collaboration is more important than the finer details of contract negotiation.*
- Responding to change over following a plan: One of the major benefits of Agile project management is that it allows teams to be flexible. This framework allows for teams to quickly shift strategies and workflows without derailing an entire project.*

GRUPPO DI QUESITI N. 5

- 1.** Descrivere i possibili impatti organizzativi derivanti dall'adozione e dallo sviluppo di servizi basati delle tecnologie AI [*tempo a disposizione: 10 min*]
- 2.** Descrivere l'impatto sull'acquisto di servizi IaaS, PaaS e SaaS degli aspetti di sicurezza dei servizi ICT [*tempo a disposizione: 10 min*]

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Docker is an open platform for developing, shipping, and running applications. Docker enables you to separate your applications from your infrastructure so you can deliver software quickly. With Docker, you can manage your infrastructure in the same ways you manage your applications. By taking advantage of Docker's methodologies for shipping, testing, and deploying code, you can significantly reduce the delay between writing code and running it in production.

Docker provides the ability to package and run an application in a loosely isolated environment called a container. The isolation and security lets you run many containers simultaneously on a given host. Containers are lightweight and contain everything needed to run the application, so you don't need to rely on what's installed on the host. You can share containers while you work, and be sure that everyone you share with gets the same container that works in the same way.

Docker provides tooling and a platform to manage the lifecycle of your containers:

- Develop your application and its supporting components using containers.*
- The container becomes the unit for distributing and testing your application.*



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- *When you're ready, deploy your application into your production environment, as a container or an orchestrated service. This works the same whether your production environment is a local data center, a cloud provider, or a hybrid of the two.*
- Docker streamlines the development lifecycle by allowing developers to work in standardized environments using local containers which provide your applications and services. Containers are great for continuous integration and continuous delivery (CI/CD) workflows.*

Milano, 1° luglio 2024

La Commissione

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