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Syllabus

Big Data

Fundamentals

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BIG DATA FUNDAMENTALS

Our goal at CertMind is to certify the skills of professionals working in the Technology context. To achieve this, we seek to ensure that professionals demonstrate their skills and knowledge through the application of an International Certification Exam.

Certification category

Main category: Emerging technologies

Categoría: New technologies and trends

Subcategory: Big Data Funtamentals

Scope of certification

The purpose of the Big Data Fundamentals Certification is to show that the professional has the knowledge about the basic concepts, structure, technologies and tools for the management and analysis of large volumes of data with Big Data, in addition to recognizing its application areas.

Prerequisites

• Be of legal age, according to the minimum age determined by law (according to the National Identity Card that must be uploaded to the platform).

• Have basic knowledge of reading, writing and basic arithmetic: addition, subtraction, multiplication and division.

• Reading and acceptance of the Code of Ethics available on the platform before taking the certification exam.

Code of Ethics

All certified professionals must know, accept and abide by the Code of Ethics, which is available for consultation on the platform.

Recommendations

• It is highly recommended that the professional attends a formal Big Data Fundamentals training of at least 20 hours, segmented into 5 sessions of approximately 4 hours.

Competencias requeridas y descripción del trabajo

In order to ensure that the professional has the minimum competencies and knowledge that can be applied in a real environment, the following topics are addressed in the exam:

Module	Job Description	Required competencies
1. Introduction	Understand and learn the context of Big Data, classification and characteristics of data according to its structure.	1. Introduction to Big Data 2. Definition of Big Data: the 5V's of Big Data
2. Data models	Learn and identify data models, their structure, characteristics and scope of use.	1. Data models: contextualization and structure of databases 2. Relational data models (SQL): structure of relational databases 3. Non-relational data models (NoSQL): structure of non-relational databases 4. Modern databases: introduction to modern databases (NewSQL)
3. Non-relational models (NoSQL)	Know and understand the operation of non-relational data models, tools, characteristics, application and importance in the context of Big Data.	1. Column-based NoSQL 2. Key-Value based NoSQL 3. Document-based NoSQL 4. Graph-based NoSQL
4. MapReduce	Know and understand how MapReduce works and its importance in the context of Big Data.	1. Origin, definition of MapReduce 2. MapReduce examples for MapReduce 3. Apache Hadoop

Module	Job Description	Required competencies
5. Big Data Technologies	Identify and understand the main differences between traditional Business Intelligence (BI) and data analytics with Big Data, platforms that enable the creation of algorithms for learning and processing data at large scale, fast and easy to use.	1. Traditional BI 2. BI vs. Big Data Analytics 3. Platforms for Big Data analytics 4. Big Data architecture and analytics 5. CRISP-DM Methodology
6. Data analytics	Understand and understand the importance of analytical models, their components and classification used in the context of Big Data.	1. Data Analytics Concepts 2. Data Analytics Models 3. Model Selection
7. Future of Big Data	Understand the market context and growth of big data, and how its use is fundamental to change the way businesses operate.	1. Challenges and future of Big Data

Evaluation of competencies

CertMind performs two types of assessment to ensure that the professional has the required competencies:

Multiple choice questions with only one answer: this evaluation modality consists of theoretical questions of multiple-choice single answer that seek to measure the degree to which the professional has understood the theoretical concepts of the certification.

Case study: It is structure is similar to that of the questions mentioned in the previous section, the difference being that, instead of asking about a particular concept, it presents a description of a situation that takes place in the real context and that must be analyzed by the professional in such a way that he/she can first identify the problem and then evaluate which of the options presented reflects the best solution to the problem situation.

Competition	Questions (1)	Case study (2)
Understand the context of Big Data, classification and characteristics of data according to its structure.	X	
Learn and identify data models, their structure, characteristics and scope of use.	X	
Know and understand the operation of non-relational data models, tools, characteristics, application and importance in the context of Big Data.	X	X
Know and understand how MapReduce works and its importance in the context of Big Data.	X	X
Identify and understand the main differences between traditional Business Intelligence (BI) and data analytics with Big Data, platforms that enable the creation of algorithms for learning and processing data at large scale, fast and easy to use.	X	X
Understand and comprehend the importance of analytical models, their components and classification used in the context of Big Data..	X	X
Understand the market context and growth of big data, and how its use is fundamental to change the way businesses operate.	X	

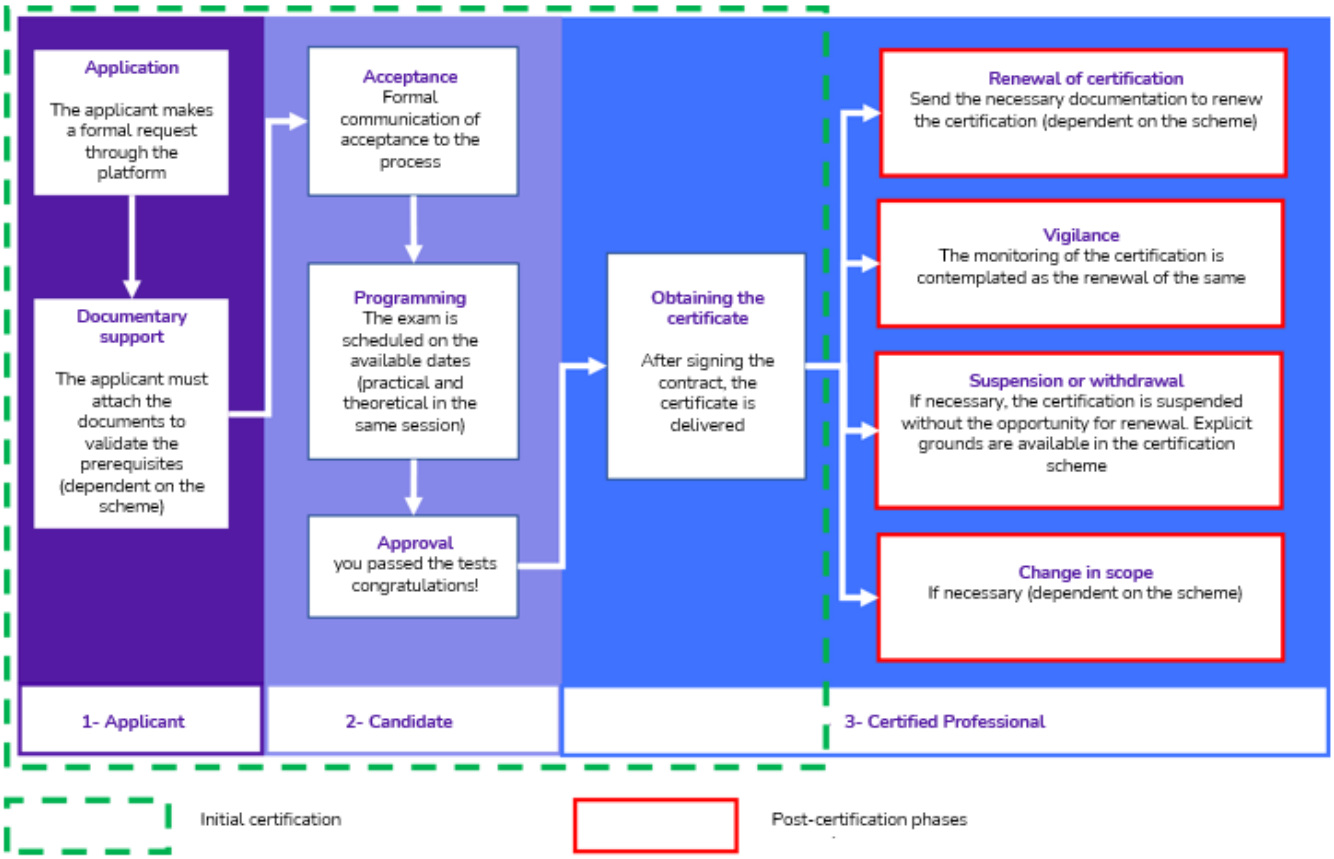
Who should take this exam?

This exam is ideal for responsible individuals or teams seeking to understand the added value that the Big Data Fundamentals methodology offers related to the development of organizations.

Roles such as: software engineers, application developers, IT architects, business analysts, data analysts, project managers, systems analysts. For individuals or teams who are involved in systems or database administration and big data analysis, and who are looking to move towards Big Data.

Certification process

The following chart shows the general life cycle for obtaining a certification:



Certification process

Each of the phases for obtaining certification for the first time is described below; the phases after obtaining the certificate (red-bordered boxes) will be explained later.

1. **Request for certification:** the applicant submits his or her certification application, on the QuizLab platform or through the partner company (where the applicant has taken his or her training). Once the application is approved, the applicant's profile is created in CertMind.

2. Documentary support: the applicant must attach in the CertMind platform his or her identity document and additionally complete the registration of his or her resume (CV).

3. Verification and acceptance: the platform verifies the applicant's compliance with the prerequisites, once verified, the application is accepted and the applicant becomes a candidate for the certification process.

4. Programming: the call for the presentation of the exam is made, directly on the platform or through its representative. The format of the exam is explained below:

- **Type:** 40-question, multiple-choice, single-answer online exam.
- **Duration:** 60 minutes.
- **Minimum passing grade:** 28/40 or 70%.
- **Additional time:** If the professional does not take the exam in his/her native language, he/she will have an additional 15 minutes and is also allowed to use a dictionary.
- **Supervision:** CertMind monitors the tests to ensure that they are performed correctly and transparently through the Invigilator Program (also known as "Proctor"). To learn more about this surveillance mechanism, please visit the following website www.certmind.org
- **Open book:** No.
- **Modality:** Available online only on the CertMind platform.
- **Validity** : 5 Years.
- **Others:** All applicants are required to read and accept the company's code of ethics and terms and conditions.

Levels of Difficulty: Bloom's Taxonomy

Bloom's Taxonomy is a theory known in the educational sector because many teachers consider it suitable for evaluating the cognitive level acquired in a subject. The objective of this theory is that after a learning process, the learner acquires new skills and knowledge. The following table presents a description of the categories of Bloom's taxonomy present in the certification exam, as well as a description of in the certification exam, as well as the percentage of each type of question in the exam.

Module	Level 1	Level 2	Level 3
Description	**Knowledge. It can comprise remembering a wide range of elements, from specific data to complete theory. But all that is needed is to bring to mind the appropriate information.**	**Compression. This can be demonstrated by passing, or translating, material from one form to another (words to numbers), interpreting the material (explaining or summarizing), and estimating future trends (predicting consequences or effects).**	**Application. Refers to the ability or capacity to use the material learned in concrete, new situations.**
Percentage of questions present in the exam	50%	30%	20%

Note: For more information on the monitoring system visit our web site https://certmind.org.

5. Obtaining the certificate: once the exam is passed and the terms and conditions contract is accepted, the certification is delivered.

Renewal, surveillance and withdrawal of certification

This phase occurs after the professional has obtained his or her certification. Renewal refers to the reissuance of the certification once its validity has come to an end. Surveillance refers to CertMind's supervision of the professional's performance during the period between certification and recertification to ensure compliance with the stipulations of this certification scheme. The activities that the certified professional must perform in order to obtain recertification are described below:

1. Application for recertification: before the certification becomes invalid, the certified professional submits his or her recertification application on the QuizLab platform. In case the certification loses its validity, the professional must go through the certification process again.

2. Registration of PUC's: the certified professional is required to register 10 PUC's every 5 years for certification renewal.

For more information about the Professional Update Credits (PUC) system visit our website https://certmind.org. The certified professional must attach the supports that accredit the PUC's in the CertMind platform.

3. Validation of documentation: the platform verifies compliance with the PUC's of the certified professional, once verified, the recertification application is accepted.

4. Obtaining recertification: Once the documents have been validated, the new certification is delivered.

Criteria for suspension or withdrawal of certification

Certification will be withdrawn from the professional in the following cases:

1. Failure to comply with the code of ethics.
2. Failure to comply with the requirements of the scheme.
3. Unsatisfactory results of the surveillance process.
4. Inability to continuously meet the competency requirements of the scheme.

Changes to the certification scheme

The Big Data Fundamentals certification scheme does not contemplate changes in the scope as currently there are no extensions or reductions in the scope or level of the certification.

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