One of the biggest challenges that computer professionals face today is keeping up with the constant changes in technology. When this industry was in its infancy, it was possible to become an expert across all areas, because the scope of the field was relatively small and changes did not happen very quickly.

Things are different now; our industry is both broad and fast paced, and the skills needed to master a single area can be quite complex. Because of this complexity, many application/software vendors have initiated certification programs to test and validate an individual’s skills in a specific area. Businesses benefit because professional certification gives them confidence that an individual has the expertise needed to perform the job. Computer professionals benefit because professional certification allows us to deliver higher levels of service and technical expertise than noncertified employees, and it can lead to new opportunities within the computer industry. Professional certification puts our careers in our control. This chapter introduces you to the various paths (and there are several) you can take to obtain DB2 Universal Database professional certification from IBM. 
The Professional Certification Program from IBM

IBM offers three levels of certification with its Professional Certification Program. A different level of competency characterizes each level, and role names within each level emphasize competency with a particular skill. Within each level, one or more role names may be possible, depending on the discipline being certified. All levels and possible role names of the Professional Certification Program from IBM are shown in Table 1-1.

A certification role consists of one of the standard role names shown in Table 1-1, followed by the product name or skill area to which the certification applies. Examples include

- IBM Certified Specialist—MQSeries
- IBM Certified Solutions Expert—Business Intelligence
- IBM Certified Developer—Object-Oriented VisualAge for C++

Table 1-1  Levels and Roles in the Professional Certification Program from IBM

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Certifies the Candidate</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Certified Specialist</td>
<td>Performs basic operational services such as basic planning, configuration, installation, support, management, and maintenance of a product with limited assistance. Performs administration of a product, with limited assistance.</td>
</tr>
<tr>
<td>IBM Certified Developer Associate</td>
<td>Has working product and environment knowledge and can code to design.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level 2</th>
<th>Certifies the Candidate</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Certified Solutions/Systems Expert</td>
<td>Demonstrates breadth of basic operational services skills in two or more environments. Demonstrates depth of advanced operational services skills such as customizing, integrating, migrating, and tuning, in a single environment.</td>
</tr>
<tr>
<td>IBM Certified Developer</td>
<td>Demonstrates the capability to plan and design an application requirements specification and build a working prototype.</td>
</tr>
</tbody>
</table>
Chapter 1: DB2 Universal Database Professional Certification

Currently, more than 100 certification roles exist in the Professional Certification Program from IBM.

### DB2 Universal Database Certification Roles

Under the Professional Certification Program from IBM, each certification category does not necessarily have the same set of certification roles. Instead, many categories have certification roles only at the levels that are appropriate. The DB2 Universal Database certification category is such a category. Each certification role (and its respective level) that is available under the DB2 Universal Database certification category is shown in Table 1-2.

As you might expect, each of the certification roles shown in Table 1-2 implies that an individual has demonstrated some level of expertise by meeting all of the requirements of that role. Thus, to better understand a particular certification role, we need to examine that role’s prerequisites and requirements.

### Table 1-2: DB2 Universal Database Certification Roles

<table>
<thead>
<tr>
<th>Level 2</th>
<th>Role</th>
<th>Certifies the Candidate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IBM Certified Instructor</td>
<td>Demonstrates training skills and has been certified in a Level 1 or Level 2 certification role</td>
</tr>
<tr>
<td></td>
<td>IBM Certified for e-business</td>
<td>Demonstrates a broad working knowledge of the IBM Application Framework for e-business and can apply its methodologies, best practices, and use of open standards to sell, advise, design, and/or consult on e-business solutions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level 3</th>
<th>Role</th>
<th>Certifies the Candidate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IBM Certified Advanced Technical Expert</td>
<td>Demonstrates multiple skills, such as expert advice and leadership in understanding and use of IBM solutions without assistance, and with references Has demonstrable skill, or experience, on the job Demonstrates depth and breadth of advanced operational services skills in more than one environment</td>
</tr>
</tbody>
</table>
IBM Certified Specialist—DB2 UDB V6/V7 User

The IBM Certified Specialist—DB2 UDB V6/V7 User certification role is designed for individuals who are knowledgeable about the fundamental concepts of DB2 Universal Database. This certification role is applicable to users who have an in-depth knowledge of basic Structured Query Language (SQL); understand how DB2 Universal Database is packaged and installed; understand how to create databases and database objects; and have a basic knowledge of database security and transaction isolation. Individuals seeking this certification should have a good understanding of DB2 Universal Database and significant experience using one of the DB2 Universal Database editions available. The roadmap for acquiring the IBM Certified Specialist—DB2 UDB V6/V7 User certification role is outlined in Figure 1-1.

As Figure 1-1 illustrates, to acquire the IBM Certified Specialist—DB2 UDB V6/V7 User certification, candidates must pass the DB2 Family Fundamentals test. This test is a software-based test that is neither platform nor product specific.
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IBM Certified Solutions Expert—Business Intelligence

The IBM Certified Solutions Expert—Business Intelligence certification role is designed for individuals who

- Are knowledgeable about IBM’s Business Intelligence solutions
- Are knowledgeable about the fundamental concepts of DB2 Universal Database
- Can perform the intermediate and advanced skills required to design, develop, and support Business Intelligence applications

This certification role is applicable to experts who evaluate Business Intelligence opportunities, identify the business and technical requirements of Business Intelligence solutions, and consult, architect, and manage the implementation of Business Intelligence solutions. Individuals seeking this certification should have a good understanding of DB2 Universal Database and significant experience using and/or implementing IBM’s Business Intelligence solutions. The roadmap for acquiring the IBM Certified Solutions Expert—Business Intelligence certification role is outlined in Figure 1-2.
As Figure 1-2 illustrates, to acquire the IBM Certified Solutions Expert—Business Intelligence certification, candidates must pass two tests. Both tests are software-based tests and neither is platform/product specific.

**IBM Certified Solutions Expert—DB2 UDB V7.1 Database Administration for UNIX, Windows, and OS/2**

The IBM Certified Solutions Expert—DB2 UDB V7.1 Database Administration for UNIX, Windows, and OS/2 certification role is designed for individuals who

- Are knowledgeable about the fundamental concepts of DB2 Universal Database, Version 7.1
- Can perform both the intermediate and the advanced skills required to perform the day-to-day administration of DB2 instances and databases in the UNIX, Windows, and/or OS/2 environment

Individuals seeking this certification should have a good understanding of DB2 Universal Database, Version 7.1 and significant experience as a DB2 Universal Database
Chapter 1: DB2 Universal Database Professional Certification

Administrator on the UNIX, Windows, or OS/2 platform. The roadmap for acquiring the IBM Certified Solutions Expert—DB2 UDB V7.1 Database Administration for UNIX, Windows, and OS/2 certification role is outlined in Figure 1-3.

As Figure 1-3 illustrates, to acquire the IBM Certified Solutions Expert—DB2 UDB V7.1 Database Administration for UNIX, Windows, and OS/2 certification, candidates must pass two tests. Both tests are software-based tests; the second is platform/product specific.

NOTE Although the test numbers are different, the roadmap for the IBM Certified Solutions Expert—DB2 UDB V6.1 Database Administration for UNIX, Windows, and OS/2 certification role is similar to the roadmap shown in Figure 1-3. This certification role is not discussed in detail because the IBM Certified Solutions Expert—DB2 UDB V7.1 Database Administration for UNIX, Windows, and OS/2 certification is the latest certification available in this area of expertise. If you already have the IBM Certified Solutions Expert—DB2 UDB V6.1 Database Administration for UNIX, Windows, and OS/2 certification or the IBM Certified Solutions Expert—DB2 UDB V5 Database Administration certification, you can obtain the IBM Certified Solutions Expert—DB2 UDB V7.1 Database Administration for UNIX, Windows, and OS/2 certification by taking (and passing) Test 513.

Figure 1-3 IBM Certified Solutions Expert—DB2 UDB V7.1 Database Administration for UNIX, Windows, and OS/2 certification roadmap
IBM Certified Solutions Expert—DB2 UDB V7.1 Family Application Development

The IBM Certified Solutions Expert—DB2 UDB V7.1 Family Application Development certification role is designed for individuals who

- Are knowledgeable about the fundamental concepts of DB2 Universal Database, Version 7.1
- Can perform the intermediate/advanced skills required to design and develop applications that interact with one or more DB2 Universal Database, Version 7.1 databases

Individuals seeking this certification should have a good understanding of DB2 Universal Database, Version 7.1 (for the UNIX, Windows, OS/2, and/or OS/390 platforms) and significant experience as a DB2 Universal Database Application Developer. The roadmap for acquiring the IBM Certified Solutions Expert—DB2 UDB V7.1 Family Application Development certification role is outlined in Figure 1-4.

![Figure 1-4 IBM Certified Solutions Expert—DB2 UDB V7.1 Family Application Development certification roadmap](image-url)
Chapter 1: DB2 Universal Database Professional Certification

As Figure 1-4 illustrates, to acquire the IBM Certified Solutions Expert—DB2 UDB V7.1 Family Application Development certification, candidates must pass two tests. Both tests are software-based tests and neither is platform/product specific.

NOTE Although the test numbers are different, the roadmap for the IBM Certified Solutions Expert—DB2 UDB V6.1 Application Development for UNIX, Windows, and OS/2 certification role is similar to the roadmap shown in Figure 1-4. This certification role is not discussed in detail because the IBM Certified Solutions Expert—DB2 UDB V7.1 Family Application Development certification is the latest certification available in this area of expertise. If you already have the IBM Certified Solutions Expert—DB2 UDB V6.1 Application Development for UNIX, Windows, and OS/2 certification or the IBM Certified Solutions Expert—DB2 UDB V5 Application Development certification, you can obtain the IBM Certified Solutions Expert—DB2 UDB V7.1 Family Application Development certification by taking (and passing) Test 514.

IBM Certified Solutions Expert—DB2 UDB V7.1 Database Administration for OS/390

The IBM Certified Solutions Expert—DB2 UDB V7.1 Database Administration for OS/390 certification role is designed for individuals who

- Are knowledgeable about the fundamental concepts of DB2 Universal Database, Version 7.1
- Can perform both the intermediate and the advanced skills required for the day-to-day administration of DB2 instances and databases in the OS/390 environment

Individuals seeking this certification should have a good understanding of DB2 Universal Database, Version 7.1 and significant experience as a DB2 Universal Database Administrator on the OS/390 platform. The roadmap for acquiring the IBM Certified Solutions Expert—DB2 UDB V7.1 Database Administration for OS/390 certification role is outlined in Figure 1-5.

As Figure 1-5 illustrates, to acquire the IBM Certified Solutions Expert—DB2 UDB V7.1 Database Administration for OS/390 certification, candidates must pass two tests. Both tests are software-based tests; the second is platform/product specific.
IBM Certified Advanced Technical Expert—DB2 for Clusters

The IBM Certified Advanced Technical Expert—DB2 for Clusters certification role is designed for individuals who

- Are knowledgeable about the fundamental concepts of DB2 Universal Database
- Can perform both the intermediate and the advanced skills required to perform the day-to-day administration of DB2 instances and databases or can perform the intermediate/advanced skills required to design and develop applications that interact with one or more DB2 Universal Database databases
- Are in the business of providing applications and/or services that, using DB2 Universal Database and its related products, provide homogeneous access to and/or retrieve enterprise data stored across a number of different data sources

Individuals seeking this certification should have extensive experience using DB2 Universal Database, Version 5.x, 6.1, or 7.1; significant experience with DB2 Universal Database Enterprise—Extended Edition; and experience as a DB2 Universal Database
Administrator. The roadmap for acquiring the IBM Certified Advanced Technical Expert—DB2 for Clusters certification role is outlined in Figure 1-6.

As Figure 1-6 illustrates, to acquire the IBM Certified Advanced Technical Expert—DB2 for Clusters certification, candidates must hold one of the Level 2 Database Administration or Application Development certifications shown in Table 1-2 and pass a comprehensive test. This test is a software-based test that is neither platform nor product specific.

**IBM Certified Advanced Technical Expert—DB2—DRDA**

The IBM Certified Advanced Technical Expert—DB2—DRDA certification role is designed for individuals who

- Are knowledgeable about the fundamental concepts of DB2 Universal Database
- Can perform both the intermediate and the advanced skills required to perform the day-to-day administration of DB2 instances and databases or can perform the
intermediate/advanced skills required to design and develop applications that interact with one or more DB2 Universal Database databases

- Are in the business of providing applications and/or services that, using DB2 Universal Database and its related products (particularly DB2 Connect), provide homogeneous access to enterprise data that is stored on one or more servers that use Distributed Relational Database Architecture (DRDA)

Individuals seeking this certification should have extensive experience using DB2 Universal Database, Version 5.x, 6.1, or 7.1; significant experience with DB2 Connect and DRDA servers; and experience as a DB2 Universal Database Administrator. The roadmap for acquiring the IBM Certified Advanced Technical Expert—DB2—DRDA certification role is outlined in Figure 1-7.

As Figure 1-7 illustrates, to acquire the IBM Certified Advanced Technical Expert—DB2—DRDA certification, candidates must hold one of the Level 2 Database Administration or Application Development certifications shown in Table 1-2 and pass a comprehensive test. This test is a software-based test that is neither platform nor product specific.

![Diagram](image-url)
IBM Certified Advanced Technical Expert—DB2 Data Replication

The IBM Certified Advanced Technical Expert—DB2 Data Replication certification role is designed for individuals who

- Are knowledgeable about the fundamental concepts of DB2 Universal Database
- Can perform both the intermediate and the advanced skills required to perform the day-to-day administration of DB2 instances and databases or can perform the intermediate/advanced skills required to design and develop applications that interact with one or more DB2 Universal Database databases
- Are in the business of providing applications and/or services that, using DB2 Universal Database and its related products (particularly DB2 DataPropagator), capture changes to data and asynchronously replicate those changes across a number of different data sources

Individuals seeking this certification should have extensive experience using DB2 Universal Database, Version 5.x, 6.1, or 7.1; significant experience with DB2 DataPropagator; and experience as a DB2 Universal Database Administrator. The roadmap for acquiring the IBM Certified Advanced Technical Expert—DB2 Data Replication certification role is outlined in Figure 1-8.

As Figure 1-8 illustrates, to acquire the IBM Certified Advanced Technical Expert—DB2 Data Replication certification, candidates must hold one of the Level 2 Database Administration or Application Development certifications shown in Table 1-2 and pass a comprehensive test. This test is a software-based test that is neither platform nor product specific.

The Certification Process

Now that you are familiar with the certification roles that are available for DB2 Universal Database, you are probably wondering, “How do I obtain one or more of these certifications?” The following steps show you how to proceed:

1. Choose the certification role you wish to pursue, and make sure you meet its prerequisites.
2. Determine which tests you need to take by examining the roadmap for the certification role you have chosen.
3. Prepare for the tests you need to take by:
   - Attending one or more of the DB2 training courses provided by IBM
   - Reviewing books such as this one and the DB2 Universal Database manuals
   - Obtaining experience using DB2 Universal Database on the job
   - Taking the sample tests found on the CD provided with this book and on the IBM Certification Program Web site (refer to the next section in this chapter “Preparing for the Tests,” for more information on sample tests)

4. Make arrangements to take the tests (refer to the “Testing Procedure” section later in this chapter for specific information on scheduling tests).

5. Take (and pass) the appropriate tests.

Once you have successfully completed all of the requirements outlined for a particular certification role, you qualify for certification. At that time, you will be sent a copy of the IBM Certification Agreement and a welcome package that includes a certificate suitable for framing, a wallet-sized certificate, a lapel pin, and camera-ready artwork of
the IBM certification logo. Upon acceptance of the terms of the IBM Certification Agreement, you will become certified and you can begin using the IBM Professional Certification title and trademark.

Preparation for the Tests

If you have already taken some training for, have experience with, or are currently using DB2 Universal Database, you may be ready to take the tests for a particular certification role right away. But to help guarantee your success in obtaining the certification you desire, you may want to take advantage of one or more of the following resources:

Education and Publications  IBM Learning Services and some independent training companies offer courses to help prepare you for certification. You can find a listing of some of the courses that are recommended for each certification test by using the Certification Navigator tool provided at the Professional Certification Program from the IBM Web site (http://www.ibm.com/certify). For more information on course schedules, locations, and pricing, contact IBM Learning Services (or the appropriate training vendor) or visit their Web site.

Self-study books (such as this one) and computer-based training (CBT) programs are also available for some certification roles. Both are designed to help you prepare for certification at your own pace.

Other reference materials (that is, IBM reference manuals, product manuals, and so on) are also available to help you prepare for certification. You can find a listing of possible reference materials for each certification test by using the Certification Navigator tool provided at the Professional Certification Program from IBM Web site (http://www.ibm.com/certify). Ordering information is often included in the listing.

Test Objectives  Test objectives describe the topics that are most likely to be covered on a particular certification test. Test objectives for each certification test can also be found by using the Certification Navigator tool provided at the Professional Certification Program from IBM Web site (http://www.ibm.com/certify).

Sample Tests  Sample tests will acquaint you with the format of the certification tests, and they can help you determine whether you are ready to take a particular test. You can find sample tests for each certification test by using the Certification Navigator tool provided at the Professional Certification Program from IBM Web site (http://www.ibm.com/certify).
The Testing Procedure

Once you’ve decided to take a test for a particular certification role, the next step is to contact the testing vendor and make arrangements to take the test. The following steps show you how to schedule and take any of the certification tests available:

1. Locate a test center that is convenient to you. IBM Certification Program tests are administered worldwide by Prometric, Inc. Before you contact them to schedule a test, you should visit their Web site (http://www.2test.com) and use their Test Center Locator tool to find the testing center that is closest to you.

2. Contact the testing vendor and make arrangements to take the test. In the United States and Canada, Prometric, Inc. can be reached at (800) 959-3926. The number to call for other countries can be found at their Web site (http://www.2test.com). You may call to schedule a test anytime up to the day before the date you want to take it.

**NOTE** If you need to reschedule or cancel a test, you must do so at least 24 hours before your scheduled test time.

When you call, be ready to provide the following information:

- Your name (exactly as you want it to appear on your certification certificate)
- An identification number (usually your Social Security/Social Insurance number)
- Your telephone number
- Your fax number
- Your mailing address (where you want your certification welcome package sent)
- A billing address (if different from your mailing address)
- The test number of the test you wish to take
- The method of payment (credit card or check) you are using
- Your company’s name (if applicable)
- The testing center where you would like to take the test
- The date that you would like to take the test

When you call, you should also have a pencil/pen and paper ready to record the test applicant identification number they assign you. You will need this number when you
arrive at the testing center. (If time permits, you will be sent a letter of confirmation
with instructions about the test date, time, and location; if you register within 48 hours
of the test date, you will not receive a letter.)

**TIP** If you have taken a certification test in the past, you should tell the testing vendor to assign you the same applicant identification number that was
used before. This will help the people at IBM to quickly recognize when you
have met all of the requirements for a particular certification role. If you are
assigned different applicant identification numbers each time you take a test, you will proba-
bly have to contact IBM before you will receive your certification welcome package.

3. **Schedule to take the test (if you paid by check).** Scheduling procedures vary accord-
ing to how you pay for the test. If you pay by credit card, you can schedule your
test immediately. If you pay by check, you will have to wait until it has been
received and payment has been confirmed before you can schedule to take the
test. Prometric, Inc. recommends that if you pay by check, you write your regis-
tration ID on the front of the check and call them seven business days after you
mail it to them. At that time, they should have received and confirmed your pay-
ment, and you should be able to schedule to take the test.

4. **Arrive at the testing location early and sign in.** You should arrive at least 15 minutes
before the scheduled time to sign in. Be ready to provide two forms of identifica-
tion and the ID number you were assigned when you made arrangements to take
the test. One form of identification must have a recent photograph, and the other
must have a signature. Examples include a driver’s license (photograph) and a
credit card (signature).

5. **Take the test.** All of the DB2 certification tests are knowledge-based, multiple-
choice tests (closed book) that are administered on a personal computer. Each
test generally contains between 50 and 70 questions and must be completed
within a specified time frame. (Test 515: *Business Intelligence Solutions* must be
completed within 60 minutes; all other tests must be completed within 75 min-
utes—tests can be completed before their designated time limit has expired.)

6. **Review the results.** As soon as you complete the test, you will receive a full score
report and a section analysis. When you pass a test, you automatically receive
credit toward certification. If you fail a test, you must repeat steps one through six
(including paying for the test again) in order to retake it. There are no restrictions
on how many times you can take a particular test; however, you are only allowed
to take the same test twice within a 30-day period.
TIP If you plan on retaking a test you have failed, pay close attention to the section analysis on your score report and brush up on the areas where you scored the lowest.

After a test has been taken, your demographic data (that is, name, address, phone number, and so on) and test results are automatically sent from the testing vendor to IBM for processing within five working days. If the test you took (and passed) completes all of the requirements of a particular certification role, IBM will send you an IBM Certification Agreement and welcome package four to six weeks after they receive the test results.

Benefits Professional Certification Provides

Certification is a tool that is designed to help objectively measure the performance of a professional on a given job at a defined skill level. Therefore, certification is beneficial both for individuals who wish to validate their own skills and performance levels and for employers who want to validate the skills and performance levels of current and/or potential employees. In addition to assessing job skills and performance levels, professional certification may also offer the following benefits:

For employees,

- Helping to create advantages in interviews
- Assisting in gaining salary increases and/or corporate advancement
- Increasing self-esteem
- Providing you with credentials that you can use to obtain industry recognition
- Providing you with ongoing technical vitality (IBM Certified professionals receive special mailings from the Professional Certification Program from IBM)

For employers,

- Helping to measure the effectiveness of training
- Reducing training course redundancy and unnecessary expenses
- Providing objective benchmarks for validating skills
- Making long-range planning easier
- Helping to manage professional development
• Aiding as a hiring tool
• Contributing to competitive advantage
• Increasing productivity

For business partners and consultants,

• Providing independent validation of technical skills
• Creating competitive advantage and business opportunities
• Enhancing prestige of the team
• Contributing to IBM’s requirements for various business partner programs

NOTE In a study of the “Return on Investment” for IBM Certification that was conducted across approximately 200 businesses in July 1999, the majority of respondents indicated that certification has a positive effect on sales volumes, profitability, and ability to close a sale; that certification reduces the time it takes to perform various tasks; and that certification has a positive effect on customer satisfaction. Details of this study can be found on the Internet at http://www-1.ibm.com/certify/program/roistudy.shtml.

Summary
The goal of this chapter was to provide you with an overview of the Professional Certification Program from IBM and to introduce you to the certification roles that are available for DB2 Universal Database. The Professional Certification Program from IBM offers three levels of certification; a different level of competency characterizes each. Each level contains one or more standard role names, and a certification role consists of one of these standard role names, followed by the product name or skill area to which the certification applies. Currently, over 100 certification roles exist.

The DB2 Universal Database certification category of the Professional Certification Program from IBM contains one Level 1 certification role, eight Level 2 certification roles, and three Level 3 certification roles. The Level 1 certification role can be attained by receiving a passing grade on a test that focuses on DB2 Universal Database Fundamentals. All Level 2 certification roles can be attained by receiving a passing grade on two knowledge-based tests. The first of these tests focuses on DB2 Universal Database Fundamentals; the second focuses on Business Solutions, DB2 Database Administration, or DB2 Application Development. All Level 3 certification roles can be attained by...
obtaining one of the Level 2 Database Administration or Application Development certifications and receiving a passing grade on one advanced knowledge-based test.

To obtain one or more certifications:

1. Choose the certification role you wish to pursue.

2. Determine which tests you need to take by examining the roadmap for the certification role you have chosen.

3. Prepare for the tests you need to take by
   - Attending one or more of the DB2 training courses
   - Reviewing books and manuals
   - Obtaining experience using DB2 Universal Database
   - Taking sample tests

4. Locate a test center that is convenient to you.

5. Contact the testing vendor and arrange to take the necessary tests.

6. Arrive at the testing location and sign in.

7. Take (and pass) the required tests.

Upon successful completion of the requirements outlined for a particular certification role, you will receive a copy of the IBM Certification Agreement and a welcome package that includes a certificate, a wallet-sized certificate, a lapel pin, and camera-ready artwork of the IBM certification logo. Upon acceptance of the terms of the IBM Certification Agreement, you will become certified and you may begin using the IBM Professional Certification title and trademark.