Visual Studio 2019
Azure DevOps Services
Azure DevOps Server 2019

Class Requirements and Setup Guide

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Accentient Classroom Training Requirements and Setup Guide

Class Setup Requirements

**ALM2019: Application Lifecycle Management Using Visual Studio 2019**
This class has students working on their own or in pairs in Visual Studio and other client applications as they setup, configure, plan, track, and execute a software development effort using Azure DevOps Server 2019.

**Setup Requirements**
- Microsoft Azure DevOps VM (see *Azure DevOps Virtual Machine Setup* in the appendix)
- Fast, reliable Internet access

**AQATP: Assuring Quality Using Azure Test Plans**
This class has students working on their own or in pairs using the web-based tools and extensions as they setup, plan, track, and execute manual and automated tests. This class uses Azure DevOps Services.

**Setup Requirements**
- Modern version of Windows with local administrator permissions
- Google Chrome browser with fast, reliable Internet access
- SQL Server Express LocalDB (installed with Visual Studio or from as part of *SQL Server Express*)
- Students must have a Microsoft Account (see *Microsoft Accounts* in the appendix)

**CDADS: Continuous Delivery Using Azure DevOps Services** (formerly *CDVSTS*)
This class has students working as a team with various DevOps practices and tools to scale their agility, share and integrate their work, and deliver working software continuously in order to enable faster delivery of value and feedback. This class uses Azure DevOps Services, Visual Studio 2019, and Azure.

**Setup Requirements**
- Modern version of Windows with local administrator permissions
- Google Chrome browser with fast, reliable Internet access
- Students must have a Microsoft Account (see *Microsoft Accounts* in the appendix)
- Microsoft Azure subscription (see *Azure Accounts and Subscriptions* in the appendix)

**MARS: Mastering Azure Repos**
This class has students working as a team in a common codebase to learn how to improve collaboration and code quality. This class uses Azure DevOps Services.

**Setup Requirements**
- Modern version of Windows with local administrator permissions
- Google Chrome browser with fast, reliable Internet access
- Students must have a Microsoft Account (see *Microsoft Accounts* in the appendix)
MPVS2019: Managing Projects Using Visual Studio 2019 and Scrum
This class has students working as a team to plan, track, and develop software using Visual Studio 2019 while following the Scrum framework. This class uses Azure DevOps Services.

Setup Requirements

- Modern version of Windows with local administrator permissions
- Google Chrome browser with fast, reliable Internet access
- Students must have a Microsoft Account (see Microsoft Accounts in the appendix)

MPAB: Managing Projects Using Azure Boards (formerly MPVSTS)
This class has students working as a team to plan and track work using Azure DevOps Services.

Setup Requirements

- Modern version of Windows with local administrator permissions
- Students must have a Microsoft Account (see Microsoft Accounts in the appendix)
- Google Chrome browser with fast, reliable Internet access

This class has students working in teams as they use Scrum, Visual Studio, and agile development practices to deliver improvements within a case study. This class uses Azure DevOps Services.

Setup Requirements

- Modern version of Windows with local administrator permissions
- Google Chrome browser with fast, reliable Internet access
- Students must have a Microsoft Account (see Microsoft Accounts in the appendix)

This class has students working as a team as they plan, track, and execute development, acceptance, and exploratory tests using Visual Studio 2019. This class uses Azure DevOps Services.

Setup Requirements

- Modern version of Windows with local administrator permissions
- Google Chrome browser with fast, reliable Internet access
- Microsoft Excel 2013, 2016, or 2019 is optional
- Students must have a Microsoft Account (see Microsoft Accounts in the appendix)
SSDT2019: Delivering High Quality Databases Using Visual Studio 2019
This class has students working in teams to effectively design, develop, test, build, and deploy SQL Server databases.

Setup Requirements
- Modern version of Windows with local administrator permissions
- Google Chrome browser with fast, reliable Internet access
- Visual Studio 2019 Professional or Enterprise edition (see Installing Visual Studio 2019 in the appendix)

Important: Visual Studio needs to be at least version 16.2.0 to address an SSDT issue.
- SQL Server 2017 Developer, Standard, or Enterprise edition (see Installing SQL Server 2017 in the appendix)

UTVS2019: Unit Testing in Visual Studio 2019
This class has students working on their own or in pairs in Visual Studio as they write and run unit tests in various ways.

Setup Requirements
- Modern version of Windows with local administrator permissions
- Google Chrome browser with fast, reliable Internet access

All Other Accentient and Scrum.org Classes
Unless previously mentioned, any other Accentient or Scrum.org class won’t require computers, and thus won’t have any specific setup requirements. That said, having laptops available with fast, reliable Internet access is always a good idea.

Appendices
Appendix A: Room Configuration
If possible, configure the classroom as an open space, with movable tables that can accommodate 4-6 students per table. Square or round tables will work fine. Long rectangular tables can be put side by side to make a square.

Configuration in rows is not recommended, and will diminish the team-based learning experience. Laptops are ideal as they are lightweight and can be moved to another table as needed. For most classes, pairing is encouraged. This means there only needs to be one laptop for every two students. Power strips are preferred.

Please provide a table or podium for the instructor laptop as well as a projector to plug into. Plenty of whiteboards and/or flip charts make for a good learning experience as well.

Visit http://accentient.com/blog/roomconfiguration for more details and some examples.
Appendix B: Installing Visual Studio 2019
For most of our classes, we recommend installing Enterprise edition, unless otherwise noted. Trial edition is fine.

1. Download and run the Visual Studio 2019 installer.

   Unless otherwise directed, you should download the most recent version/update of Visual Studio. This is done automatically when you download from here: https://www.visualstudio.com/downloads

2. Ensure the following Workloads are selected at a minimum:
   
   • ASP.NET and web development (include Architecture and analysis tools)
   • Azure development
   • .NET desktop development
   • Data storage and processing

3. Ensure the following Individual components are selected at a minimum:

<table>
<thead>
<tr>
<th>Cloud, database, and server</th>
<th>Data sources for SQL Server support, IIS Express, SQL Server Data Tools, SQL Server Express 2016 LocalDB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code tools</td>
<td>Azure DevOps Office Integration, Class Designer, Dependency Validation, Developer Analytics tools, DGML editor, Git for Windows</td>
</tr>
<tr>
<td>Debugging and testing</td>
<td>.NET profiling tools</td>
</tr>
<tr>
<td>Development activities</td>
<td>ASP.NET MVC 4</td>
</tr>
</tbody>
</table>

Some of the above individual components may already be selected based on the workloads you picked. The above workloads and components will require > 10 gb of disk space and can take several minutes to install.

Appendix C: Installing SQL Server 2017
We recommend installing Developer edition, however Standard and Enterprise editions will work just fine.

1. Download and run the appropriate SQL Server 2017 installer.

2. Install the appropriate edition, selecting the Database Engine Services, Full-Text and Semantic Extractions for Search, and Client Tools Connectivity and leaving all of the other defaults, adding the appropriate admins.

3. After installation is complete, re-run the above steps and install a second instance named DEV.

4. Repeat the above step installing a third instance named PROD.

5. Download and install SQL Server Management Studio.
Appendix D: Microsoft Accounts

Some Accentient courses require each student to have a Microsoft Account (formerly known as a Live ID) to create and access various Microsoft services, such as Azure DevOps Services and Azure.

If the student doesn’t have a Microsoft Account or wants to create a new, “throwaway” one, they can visit https://signup.live.com and provide the required information, which includes name, username, password, and other details. They will also need to provide a phone number or other method in order to reset a forgotten password. Be aware that there is a daily limit to the number of Microsoft Accounts that can be created from a public IP address. Please allow enough time to create the Microsoft Accounts (or use multiple IPs).

A downside to using a throwaway Microsoft Account for training, is that it won’t be associated to a Visual Studio subscription (formerly known as an MSDN subscription). Should the student join a team using the throwaway Microsoft Account, they may have more limited capability than normal.

AAD-Backed Microsoft Accounts

A Microsoft Account that is backed by Azure Active Directory (AAD), cannot be used unless everyone on the student’s classroom team also has AAD-backed accounts. In other words, an Azure DevOps Services account cannot contain a mix of AAD-backed MAs and regular/personal MAs. It is possible to create/associate a new Microsoft Account with your AAD-backed account, with similar passwords for the sake of using an existing Visual Studio subscription. The signup process is similar to the above steps for first-time Microsoft Account creation. If this is the plan, everyone on the classroom team should to use their personal Microsoft Accounts, rather than their work one, when doing the hands-on activities. For more information, view this FAQ.

Appendix E: Azure DevOps Services Accounts

Some Accentient courses will have students creating and using an Azure DevOps Services account during class. Azure DevOps Services is free for small teams of five or less. Teams formed during class that have more than five students can use Azure DevOps Services effectively, so long as …

- The extra students have a Visual Studio subscription (and are using that Microsoft Account)
- The extra students don’t mind being a stakeholder
- The extra students don’t mind going without a keyboard (and pairing with another student instead)

As an option for speeding up class, the instructor could create generically-named Azure DevOps Services accounts ahead of time, and even add the student Microsoft Accounts (if they are known ahead of time) as team members of those accounts. Example: https://dev.azure.com/awesometraining, etc.

Appendix F: Azure Accounts and Subscriptions

Some Accentient courses require an Azure account with an active subscription. As these accounts typically require extra validation and financial details, these services should be provisioned ahead of time by the training company or group sponsoring the class. Free/promotional subscriptions have time/credit limits.

If Azure Free Accounts will be used, then please keep in mind that the Microsoft Account must not have been used to create a trial account before. Visit http://bit.ly/2wnXSHA for more information.

Important: After class is over, remove any resources created during class so as not to incur ongoing expense.
Appendix G: Azure DevOps Virtual Machine Setup

**Note:** If you are setting up the *Administering Azure DevOps Server* class, you will need to use a different VM.

**System Requirements**

The host computer running the VM can be a desktop or a laptop computer. It must be capable of running Microsoft Hyper-V or Oracle VirtualBox (free). For a Hyper-V implementation, please follow the default instructions as outlined on the [Working with the Microsoft Visual Studio DevOps VM](#) page. For Oracle VirtualBox implementation, please provide computers that meet the following criteria:

- **Operating System:** Windows 8, 8.1, 10 or Windows Server 2008 R2 or higher
- **Processor:** Fast Intel VT or AMD-V capable (SLAT-capable CPU required if using Windows 8)
- **RAM:** 8+ GB of free physical RAM (allows at least 6 GB to be assigned to the VM)
- **Hard disk space:** 80 GB (more if using snapshots), x 2 when converting VHD to VDI

**Note:** If your environment cannot support these requirements, or you want to avoid the hassle of setting up and configuring the environment, we can arrange hosted VMs as a service at an additional cost. Please contact us for more information.

**Download the Virtual Machine**

1. Download the [DevOps Virtual Machine](#) to a known location.

   **Note:** Be sure to download the 2019 “Spring Update” version. Those direct links can be found [here](#). The download is ~27 GB. Consider using a download manager, such as Free Download Manager, and be sure to budget enough time before class to complete this and the rest of the steps.

2. If you are using Hyper-V, follow those specific instructions on [this](#) page, and don’t forget to enable Internet access. Otherwise, follow the rest of these instructions to configure the VM to run using Oracle VirtualBox.

**Configure Oracle VirtualBox**


   **Note:** These instructions were created using version 6.0.0. Newer versions should be compatible.

2. Use the **vboxmanage** command-line utility to convert the .vhd file to a .vdi formatted file.

   Here is an example command (with no break):

   ```
   "c:\program files\oracle\virtualbox\vboxmanage" clonehd c:\almvm\almvm.vhd c:\almvm\almvm.vdi --format vdi
   ```

   **Note:** The process can take a long time. Use separate drives or SSDs for better performance.
3. Launch **VirtualBox**, create a new VM, give it a friendly name, and select **Windows 2016 (64-bit)** as the operating system.

   Write down the friendly name you gave the VM ________________________________________.

4. Give the VM adequate memory (at least 6 GB is recommended).

5. Select the **Use an existing virtual hard drive file** option, select the .vdi file, and click **Create**.

6. In the **Oracle VM VirtualBox Manager**, select the new VM and click **Settings**.

7. On the **General** page > **Advanced** tab, set **Shared Clipboard** to **Bidirectional**.

8. On the **System** page > **Processor** tab, set the number of **CPUs** to **2** (or more) if possible.

9. Click **OK** to save your settings.
Start VM, Activate and Configure Windows

1. Start the VM and sign in as Administrator using the password **P2sw0rd**.

   To send the Ctrl + Alt + Delete key combination, hold down the Right Ctrl key (known as the “host” key) and press the Del key. The password contains an upper case “P”, the number “2”, and a zero “0”.

2. Confirm that Windows Firewall is Off for all profiles (public, private, etc.)

3. Run `gedit.msc`, navigate to Computer Configuration > Administrative Templates > System > Server Manager, and enable the Do not display Server Manager automatically at logon policy.

4. Next, navigate to Computer Configuration > Administrative Templates > Windows Components > Windows PowerShell, enable the Turn on Script Execution policy, and select the Allow all scripts policy.


6. Next, navigate to User Configuration > Administrative Templates > Windows Components > Attachment Manager, double-click Inclusion list for low file types, click Enabled and enter these extensions: `.bat; .cmd; .exe; .msi; .ps1; .reg; .vbs` in Options.

7. From the Control Panel navigate to System and Security > System.

   You can also get here by right-clicking on Computer and selecting Properties.

8. **Activate** Windows if it is not already activated.

   **Note**: Activation requires Internet connectivity.
9. Launch the **Command Prompt** as an **Administrator**.

   You can do this by searching for the **Command Prompt** from the start screen, right-clicking on it, and selecting *Run as administrator*.

![Command Prompt screenshot](image)

10. Run **sconfig**, select **5** and then **M** to disable automatic updates. Exit the command window when finished.

11. Set the **Time zone** and **Time** appropriately.

12. From **File Explorer**, choose to see **File name extensions**.

**Install VirtualBox Guest Additions**

1. On the VirtualBox console, select **Devices > Install Guest Additions CD image**.

2. Using **File Explorer**, navigate to the newly-mounted CD Drive and run **VBoxWindowsAdditions.exe**.

3. Install the additions using the default settings.

4. Ensure that **Reboot now** is selected and click **Finish** to complete the installation.

**Re-arm Microsoft Office**

1. Sign in as **Administrator** using the password **P2ssw0rd**.

2. Launch the **Command Prompt** as an **Administrator**.

3. From the command line, execute these two commands:

   ```
   cd c:\program files (x86)\microsoft office\office16
   ospprearm.exe
   ```

   If you are running a different version of Excel, you’ll need to tweak the path accordingly. Executing the rearm command resets the 30 day trial usage. If prompted to activate any of the products, you can rerun this step up to a total of 5 times. For more information visit [http://bit.ly/1aXcdZo](http://bit.ly/1aXcdZo). This page is for Office 2013, but applies to the 2016 version as well.
Additional Setup

1. Launch **Internet Explorer**, delete all favorites, and set the home page to [www.google.com](http://www.google.com).

   *Note*: Although the students will primarily be using Chrome in class, there are some Internet Explorer tasks.

2. Download and install Google **Chrome**, making it the default browser.

3. Install any missing **Visual Studio 2019** components, such as **ASP.NET MVC 4**. (see *Installing Visual Studio 2019* in the appendix).

   *Note*: It’s ok to update the Visual Studio **Installer**, but don’t update Visual Studio itself. Please leave it the same version as came with the Virtual Machine, just *modify*, and install any missing pieces.

4. Using **File Explorer**, navigate to **C: \ Users \ Public \ Public Desktop** and delete all folders and files.

5. Download/copy and save the corresponding **CoursewareFiles.exe** to the Public Desktop folder.

   The instructor should know where to obtain this file. Contact **richard@accentient.com** if you have any questions. Students can also do this on the first day of class, if the files are made available.

6. Delete the following user accounts: **Clemri**, **Deniz**, **Lan**, **Michael**, and **Sachin**.

7. Delete the following folders and their contents:
   - **C: \ Bits**
   - **C: \ FabrikamRM**
   - **C: \ Headshots**
   - **C: \ IntelliTrace**
   - **C: \ LogFileLocation**
   - **C: \ PartsUnlimitedDB**
   - **C: \ PerfLogs**
   - **C: \ Samples**
   - **C: \ SymCache**

8. Shut down **Windows**.

Create a Snapshot (optional)

1. In the VM Manager, select the VM and select **Snapshots**.

2. Take a snapshot, providing an appropriate name and optional description, and click **OK**.

   Snapshots can be used to revert a VM to a previous configuration state, such as our initially configured and activated one. This will help if you plan on distributing the VM to various student machines and want to provide the ability to reset the VM to a known state to go through the labs.