EX.NO 9: Create a web application using Microsoft Azure

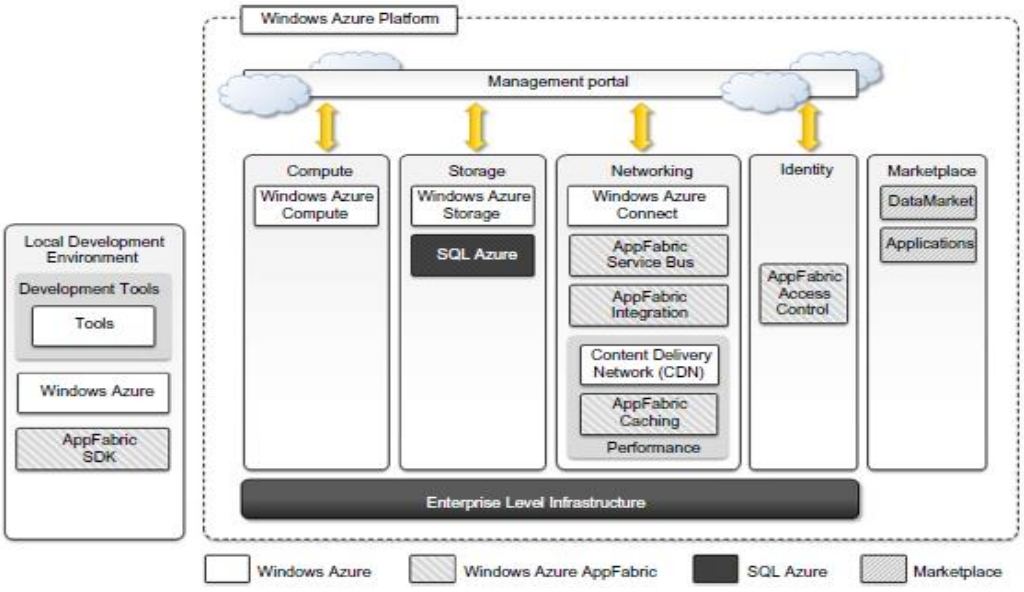
Date:

READING MATERIALS:

Microsoft Windows Azure is a cloud operating system built on top of Microsoft datacenters' infra-Structure and provides developers with a collection of services for building applications with cloud technology. Services range from compute, storage, and networking to application connectivity, access control, and business intelligence. Any application that is built on the Microsoft technology can be scaled using the Azure platform, which integrates the scalability features into the common Microsoft technologies such as Microsoft Windows Server 2008, SQL Server, and ASP.NET.

Azure core concepts

The Windows Azureplatformismadeupofafoundationlayerandasetofdeveloperservicesthat can beusedtobuildscalableapplications.Theseservicescovercompute,storage, networking,and identity management, which are tied together by middleware called AppFabric. This scalable com- putting environment is hosted within Microsoft datacenters and accessible through the Windows Azure Management Portal. Alternatively, developers can recreate a Windows Azure environment (with limited capabilities) on their own machines for development and testing purposes.



Compute services

Compute services are the core components of Microsoft Windows Azure, and they are delivered by Means of the abstraction of roles. A role is a runtime environment that is customized for a specific Compute task .Roles are managed by the Azure operating system and instantiated on demand in order to address surges in application demand. Currently,there are three different roles: Web role, Worker role, and Virtual Machine(VM)role.

Webrole

The Web role is designed to implement scalable Web applications. Web roles represent the units of deployment of Web applications within the Azure infrastructure. They are hosted on the IIS 7 Web Server, which is a component of the infrastructure that supports Azure. When Azure detects peak loads in the request made to a given application, it instantiates multiple Web roles for that application and distributes the load among them by means of a load balancer. Since version 3.5, the .NET technology natively supports Web roles; developers can directly develop their applications in Visual Studio, test them locally, and upload to Azure. It is possible to develop ASP.NET (ASP.NET Web Role and ASP.NET MVC 2 Web Role) and WCF (WCF Service Web Role) applications. Since IIS 7 also supports the PHP runtime environment by means of the FastCGI module, Web roles can be used to run and scale PHP Web applications on Azure (CGI Web Role). Other Web technologies that are not integrated with IIS can still be hosted on Azure (i.e., Java Server Pages on Apache Tomcat), but there is no advantage to using a Web role over a Worker role.

Worker role

Worker roles are designed to host general compute services on Azure. They can be used to quickly provide compute power or to host services that do not communicate with the external world through HTTP. A common practice for Worker roles is to use them to provide background processing for Web applications developed with Web roles.

Developing a worker role is like a developing a service. Compared to a Web role whose computation is triggered by the interaction with an HTTP client (i.e., a browser), a Worker role runs continuously from the creation of its instance until it is shut down. The Azure SDK provides developers with convenient APIs and libraries that allow connecting the role with the service provided by the

runtime and easily controlling its startup as well as being notified of changes in the hosting environment. As with Web roles, the .NET technology provides complete support for Worker roles, but any technology that runs on a Windows Server stack can be used to implement its core logic. For example, Worker roles can be used to host Tomcat and serve JSP-based applications. Virtual machine role The Virtual Machine role allows developers to fully control the computing stack of their compute service by defining a custom image of the Windows Server 2008 R2 operating system and all the service stack required by their applications. The Virtual Machine role is based on the Windows Hyper-V virtualization technology (see Section 3.6.3), which is natively integrated in the Windows server technology at the base of Azure. Developers can image a Windows server installation complete with all the required applications and components, save it into a Virtual Hard Disk (VHD) file, and upload it to Windows Azure to create compute instances on demand. Different types of instances are available, The Table 9.7 provides an overview of the options offered during 2011-2012. Compared to the Worker and Web roles, the VM role provides finer control of the compute service and resource that are deployed on the Azure Cloud. An additional administrative effort is required for configuration, installation, and management of services.

Table 9.7 Windows Azure Compute Instances Characteristics, 2011–2012

Compute Instance Type	CPU	Memory	Instance Storage	I/O Performance	Hourly Cost (USD)
Extra Small	1.0 GHz	768 MB	20 GB	Low	$0.04
Small	1.6 GHz	1.75 GB	225 GB	Moderate	$0.12
Medium	2 × 1.6 GHz	3.5 GB	490 GB	High	$0.24
Large	4 × 1.6 GHz	7 GB	1,000 GB	High	$0.48
Extra Large	8 × 1.6 GHz	14 GB	2,040 GB	High	$0.96

Storage services

Compute resources are equipped with local storage in the form of a directory on the local file system that can be used to temporarily store information that is useful for the current execution cycle of a role. If the role is restarted and activated on a different physical machine, this information is lost. Windows Azure provides different types of storage solutions that complement compute services with a more durable and redundant option compared to local storage. Compared to local storage,

these services can be accessed by multiple clients at the same time and from everywhere, thus becoming a general solution for storage.

Blobs

Azure allows storing large amount of data in the form of binary large objects (BLOBs) by means of the blobs service. This service is optimal to store large text or binary files. Two types of blobs are available:

• Block blobs. Block blobs are composed of blocks and are optimized for sequential access; therefore they are appropriate for media streaming. Currently, blocks are of 4 MB, and a single block blob can reach 200 GB in dimension.

• Page blobs. Page blobs are made of pages that are identified by an offset from the beginning of the blob. A page blob can be split into multiple pages or constituted of a single page. This type of blob is optimized for random access and can be used to host data different from streaming. Currently, the maximum dimension of a page blob can be 1 TB.

Blobs storage provides users with the ability to describe the data by adding metadata. It is also possible to take snapshots of a blob for backup purposes. Moreover, to optimize its distribution, blobs storage can leverage the Windows Azure CDN so that blobs are kept close to users requesting them and can be served efficiently

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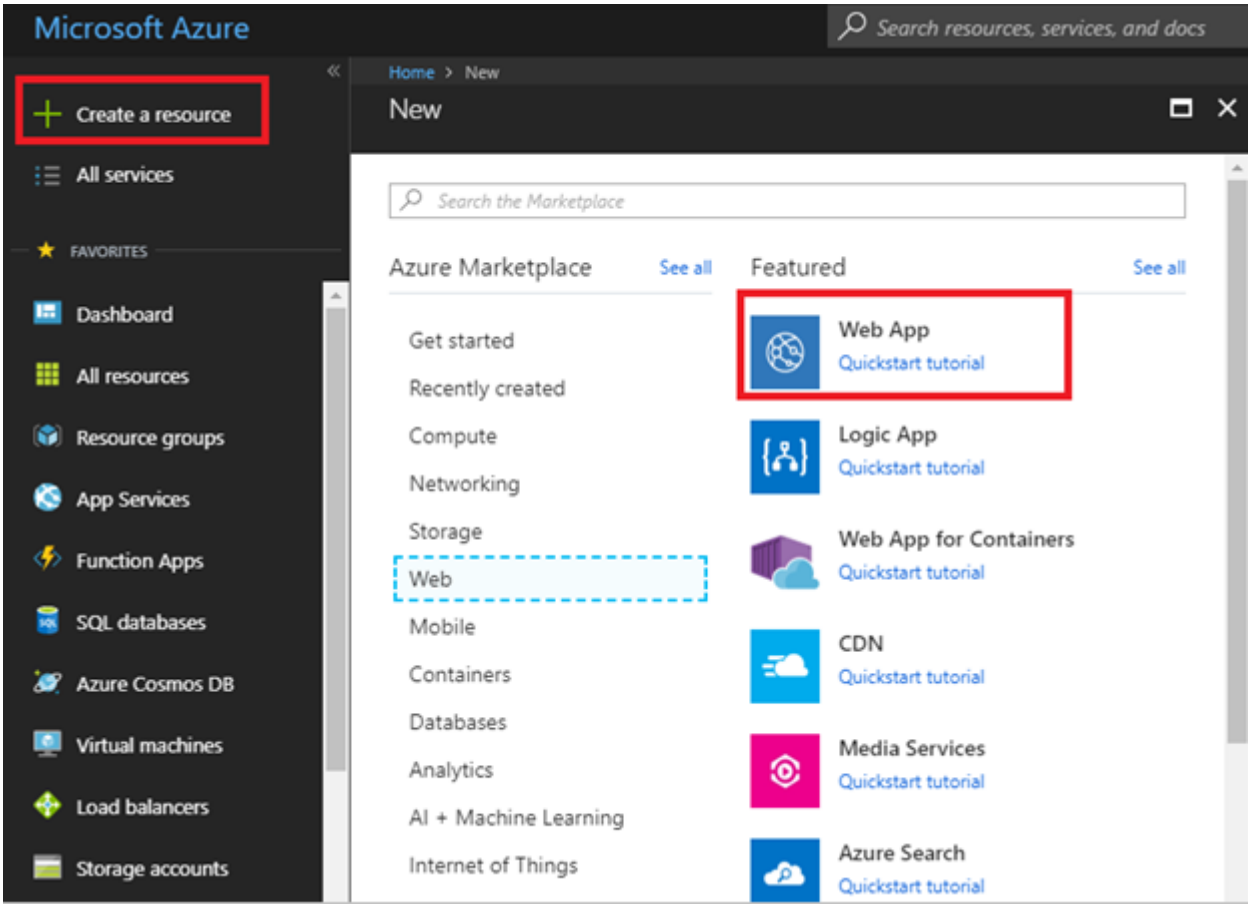
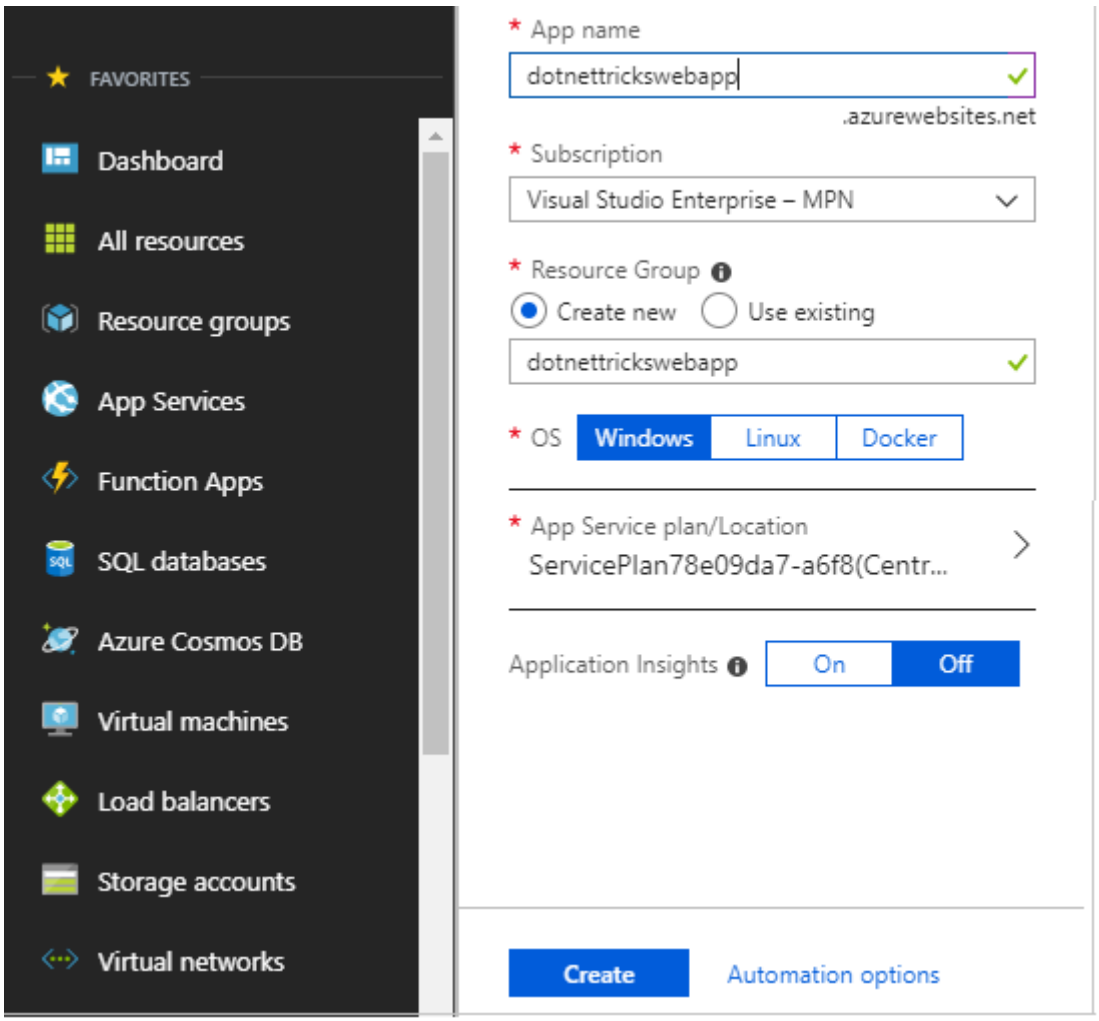
PROCEDURE with SCREENSHOTS:

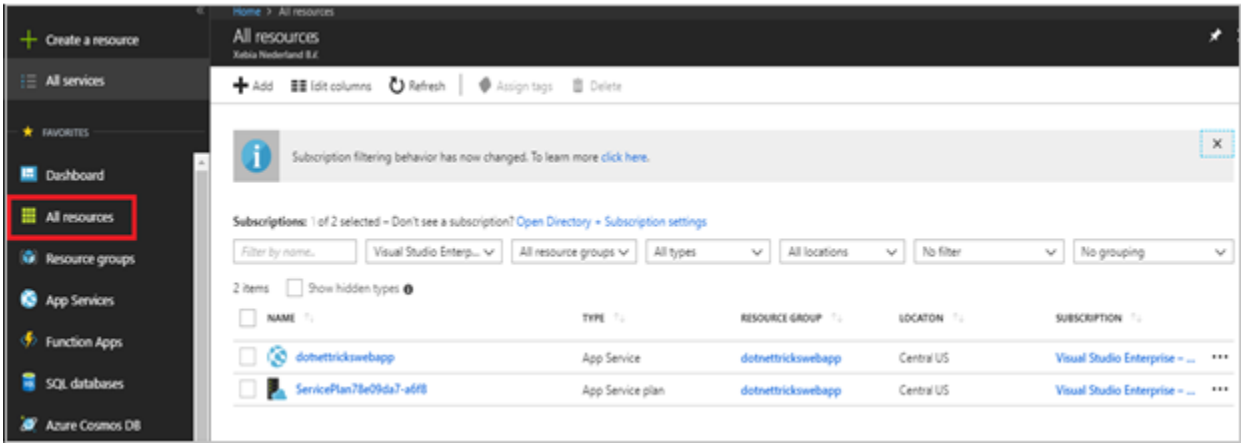
Step 1 : Log in to the Azure portal, Click on Create a resource and select web from the marketplace.



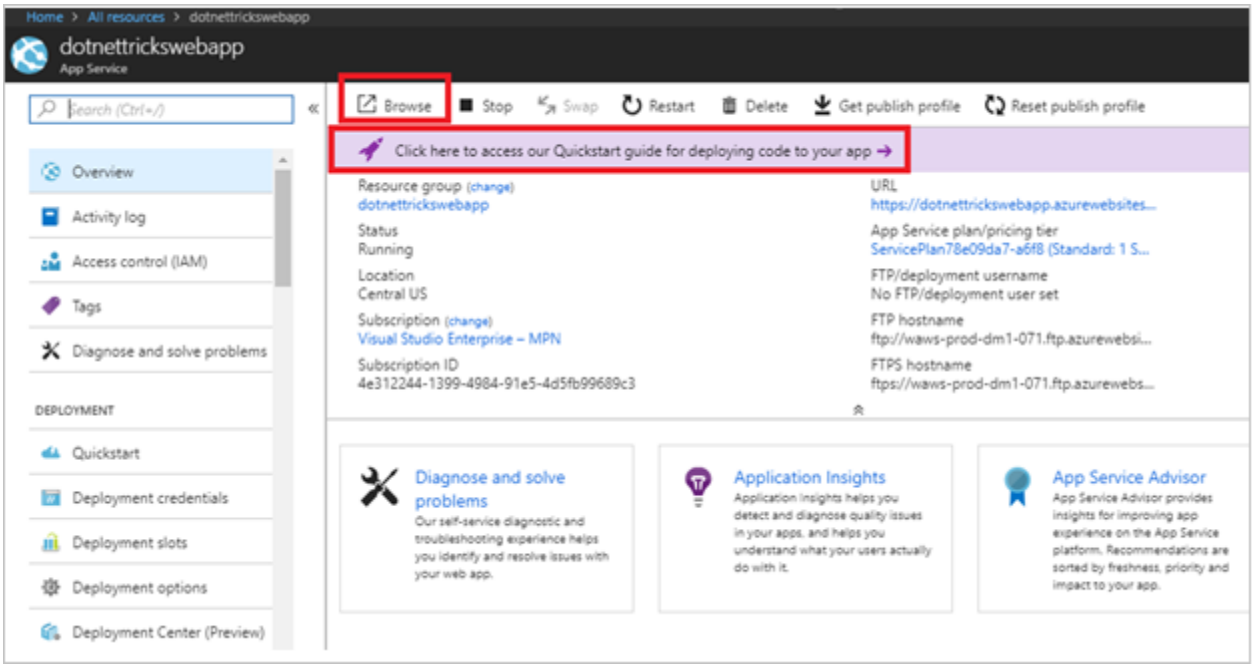
Step 2 : Click on Web App, Fill in name, resource group and select app service plan.



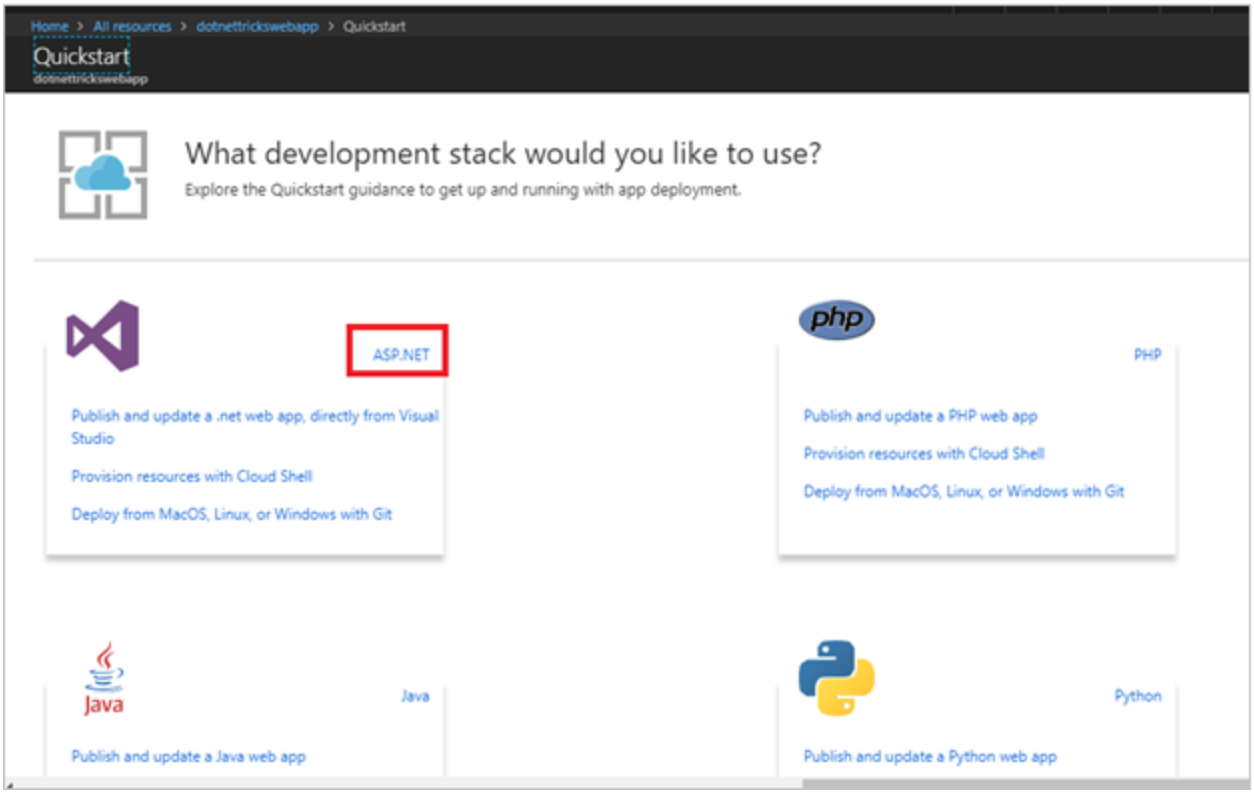
Step 3: Go to All resources in the left panel to see the list of created resources



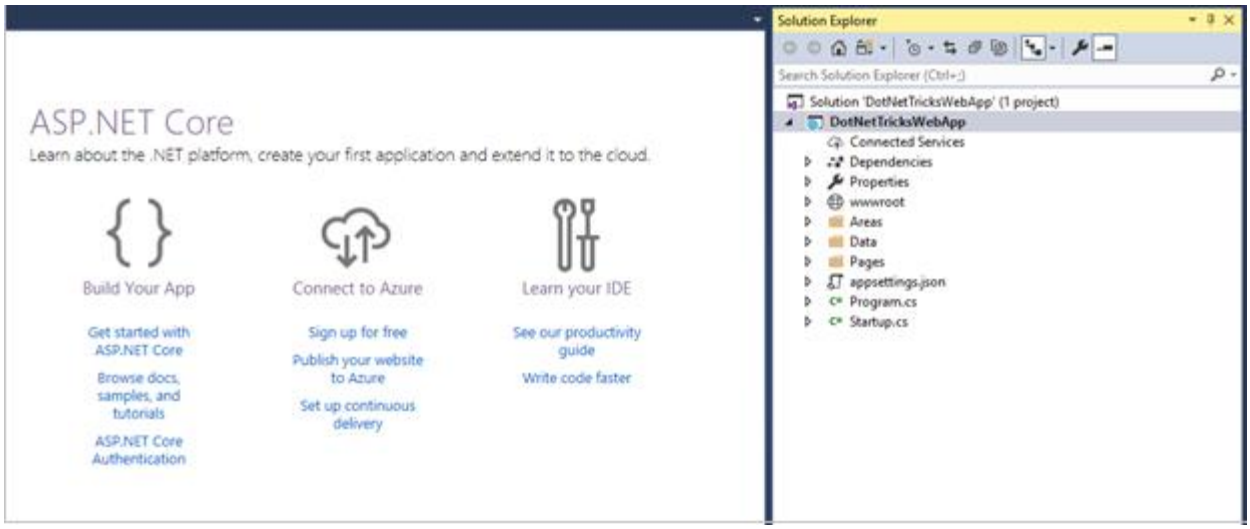
Step 4: Click on web app name, then click on the browse button to open the web app in browser.



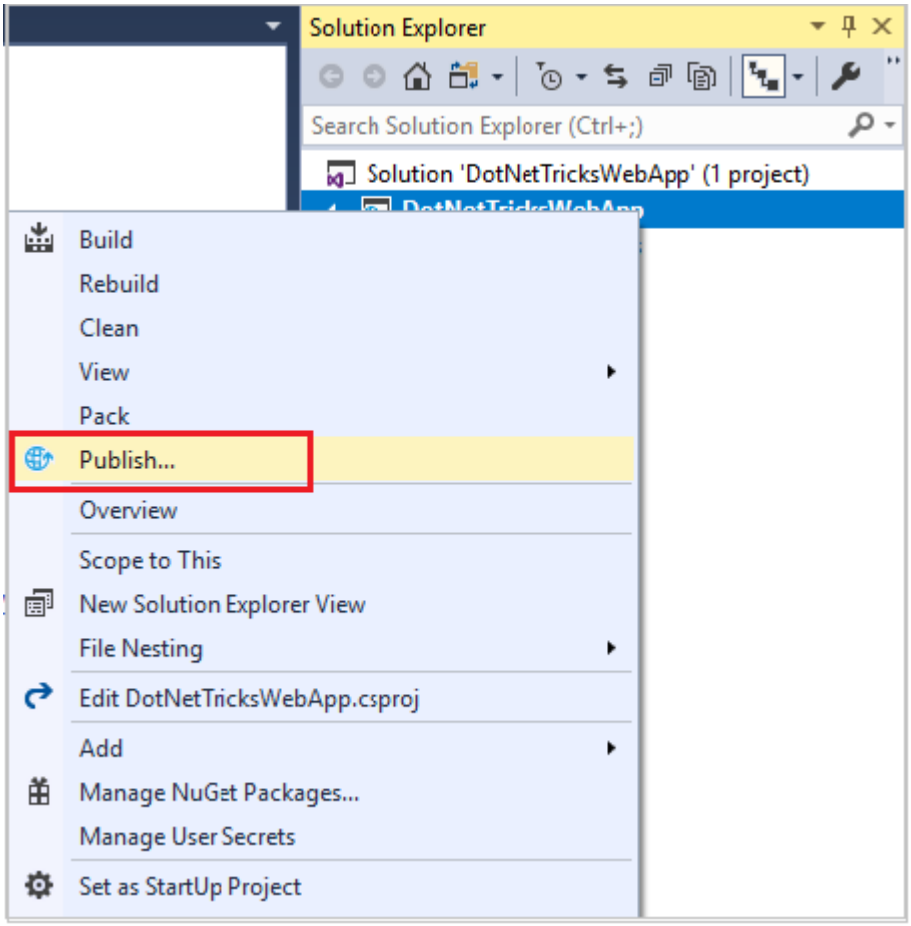
Step 5 : Click on the purple ribbon as highlighted above to deploy a source code into the web app, and click on ASP.NET and follow the guide.



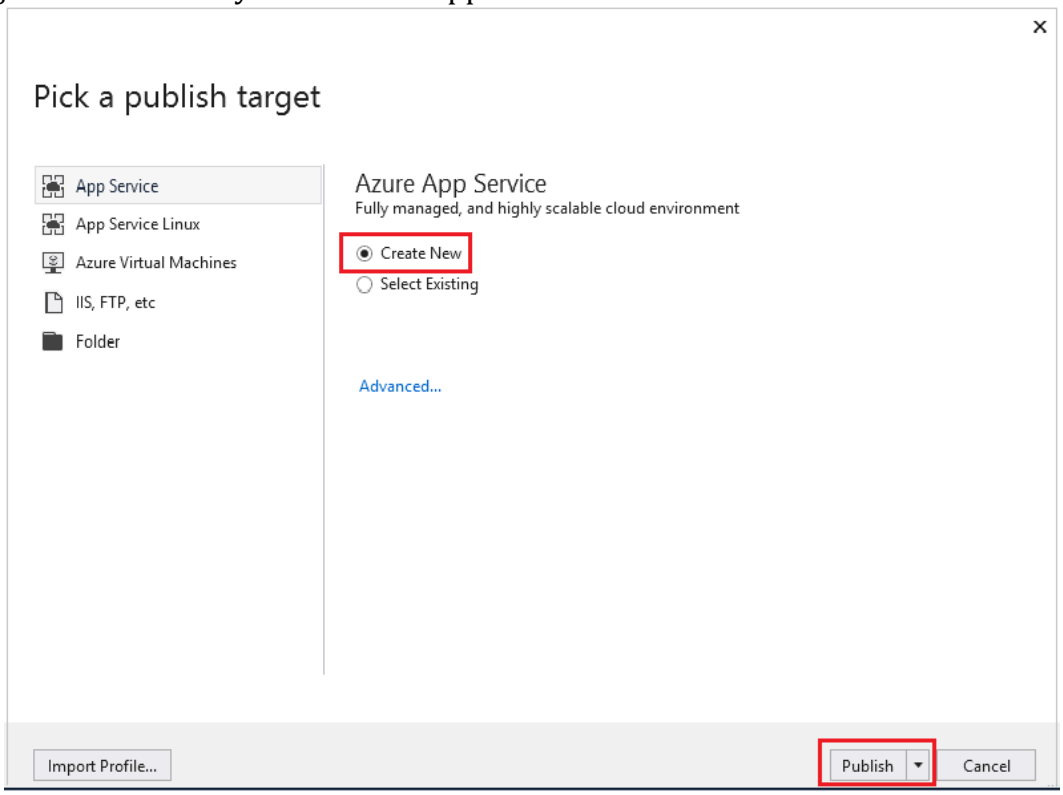
Step 6: To directly deploy web page from visual studio, create a new ASP.NET Core application in Visual Studio.



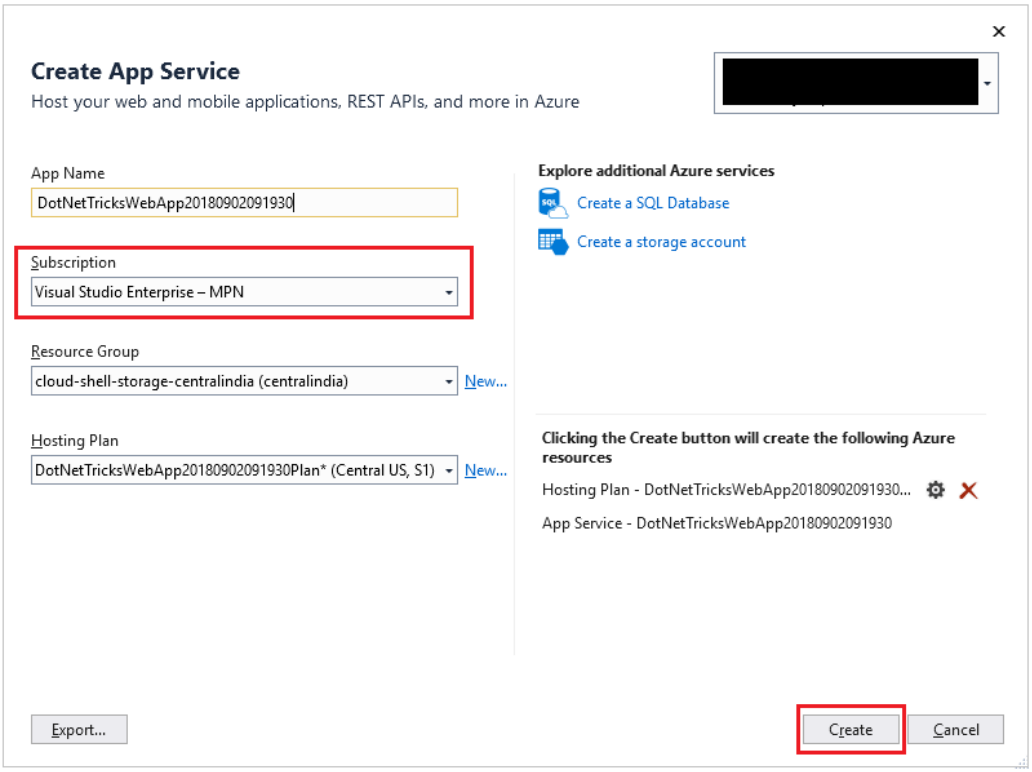
Step 7 : Right-click on the project file and select publish.



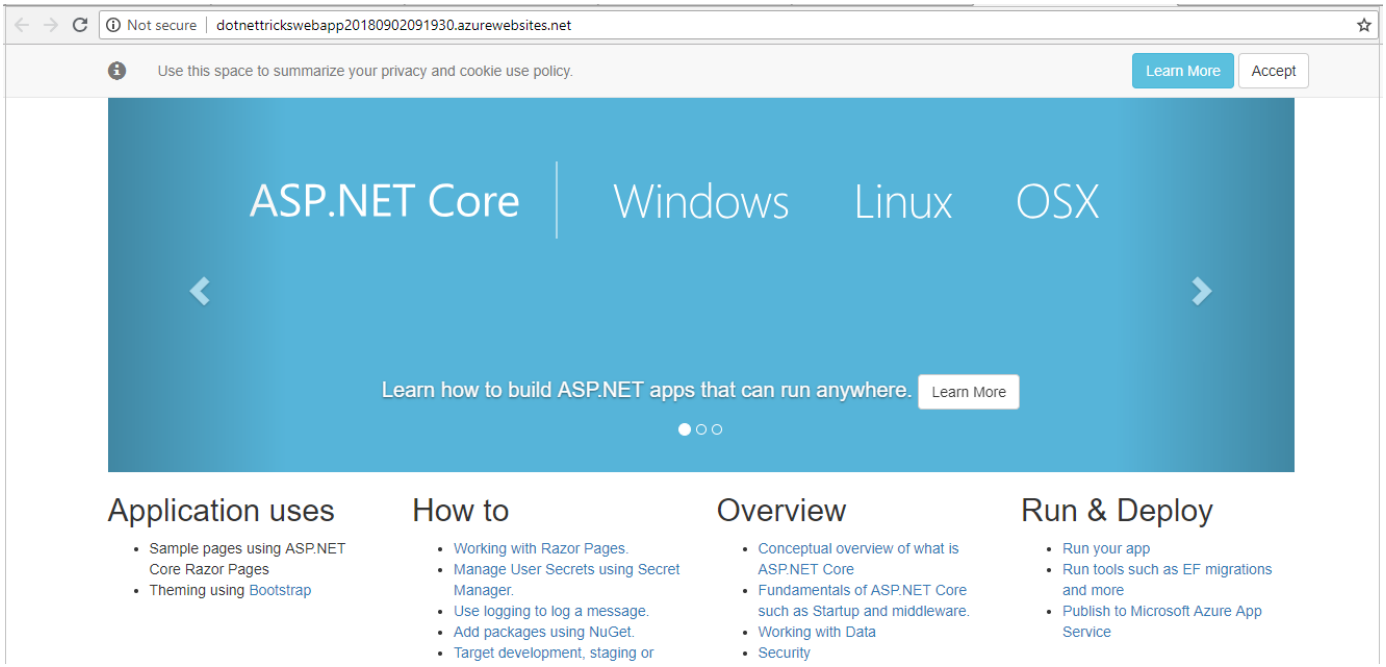
Step 8 : In Publish target window Select the ‘Create New’ option and click on Publish button, or existing to add to already created web app.



Step 9 : In Create App Service dialogue box, fill in the Azure Subscription.



Step 10 : Click create and The Visual studio starts creating the web app in Azure and deploys the application.



Evaluation by faculty	
Criteria	Marks
	/20
	/25
	/20
	/10
Total	/75
Faculty Signature with Date	

RESULT: