MS BUILD PROJECT

❖ Open Developer Command Prompt for Visual Studio, browse to the Folder where you want to create the application. Go to \Desktop\

```
Select Developer PowerShell for VS 2019

PS C:\Users\devops13> dir


    Directory: C:\Users\devops13


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d-----         7/15/2022     4:39 PM                .vscode
d-r---         7/13/2022     9:33 AM                3D Objects
d-r---         7/13/2022     9:33 AM                Contacts
d-r---         7/27/2022     4:31 PM                Desktop
d-r---         7/27/2022     4:01 PM                Documents
d-r---         7/21/2022     5:42 PM                Downloads
d-----         7/13/2022    10:20 AM                eclipse
d-r---         7/13/2022     9:33 AM                Favorites
d-r---         7/13/2022     9:33 AM                Links
d-r---         7/13/2022     9:33 AM                Music
d-r---         7/13/2022     9:33 AM                Pictures
d-r---         7/13/2022     9:33 AM                Saved Games
d-r---         7/13/2022     9:33 AM                Searches
d-----         7/15/2022     2:38 PM                source
d-r---         7/13/2022     9:33 AM                Videos
d-----         7/15/2022     5:09 PM                WINDOWS
-a----         7/21/2022     5:06 PM            202 .gitconfig
```

```
PS C:\Users\devops13> cd .\Desktop\
PS C:\Users\devops13\Desktop> dir


    Directory: C:\Users\devops13\Desktop


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d-----         7/27/2022     4:31 PM                HelloWorld1
d-----         7/15/2022     4:44 PM                vscode
-a----         7/21/2022     2:37 PM            465 DETAILES.txt
-a----         7/12/2022     6:38 PM           1098 Eclipse IDE for Java Developers - 2022-06.lnk
-a----         7/21/2022     5:43 PM           2382 GitHub Desktop.lnk
-a----         7/12/2022     8:37 PM           2024 Jupyter Notebook (Anaconda3).lnk
-a----         7/12/2022     4:06 PM           1255 Microsoft SQL Server Management Studio 18.lnk
-a----         7/12/2022     5:01 PM           2383 MongoDBCompass.lnk
-a----         7/12/2022     4:51 PM           2389 MySQL 8.0 Command Line Client.lnk
-a----         7/12/2022     4:26 PM           1230 MySQL Shell.lnk
-a----         7/12/2022     4:26 PM           2213 MySQL Workbench 8.0 CE.lnk
-a----         7/15/2022     5:00 PM             25 New Text Document.txt
-a----         2/16/2022     4:32 PM        1273576 putty.exe
-a----         7/21/2022     2:34 PM            225 Sign in [Jenkins].URL
-a----         7/14/2022     1:05 PM            306 urls_link.txt
-a----         7/12/2022     5:25 PM           1762 Visual Studio 2019.lnk
-a----         7/13/2022     9:34 AM           1409 Visual Studio Code.lnk
```

❖ Type md HelloWorld to create a subfolder name Helloworld

```
PS C:\Users\devops13\Desktop> md HelloWorld


    Directory: C:\Users\devops13\Desktop


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d-----         7/28/2022     9:39 AM                HelloWorld
```

❖ Type cd Helloworld to go into new dir

```
PS C:\Users\devops13\Desktop> cd .\HelloWorld\
PS C:\Users\devops13\Desktop\HelloWorld>
```
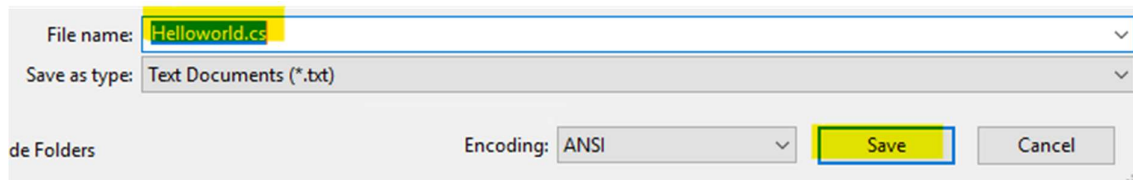
❖ Start Notepad and type code

```
PS C:\Users\devops13\Desktop\HelloWorld> notepad
```

```
Untitled - Notepad
File  Edit  Format  View  Help
using System;

class HelloWorld
  {
    static void Main()
    {
#if DebugConfig
        Console.WriteLine("We are in Debug Config");
#endif
        Console.WriteLine("HelloWorld");
    }
  }
```

❖ Save the Source Code file and name it Helloworld.cs

```
File name:  Helloworld.cs                                    ⌄
Save as type: Text Documents (*.txt)                         ⌄

de Folders                  Encoding: ANSI      ⌄    Save      Cancel
```

❖ Build the application by typing csc helloworld at the cmd prompt

```
PS C:\Users\devops13\Desktop\HelloWorld> csc .\Helloworld.cs
Microsoft (R) Visual C# Compiler version 3.4.0-beta4-19569-03 (82f2e254)
Copyright (C) Microsoft Corporation. All rights reserved.
```

❖ Test the application by typing helloworld at cmd prompt

```
PS C:\Users\devops13\Desktop\HelloWorld> .\Helloworld
HelloWorld
```

❖ Delete the application by typing del helloworld.exe at cmd

```
PS C:\Users\devops13\Desktop\HelloWorld> del .\Helloworld.exe
```
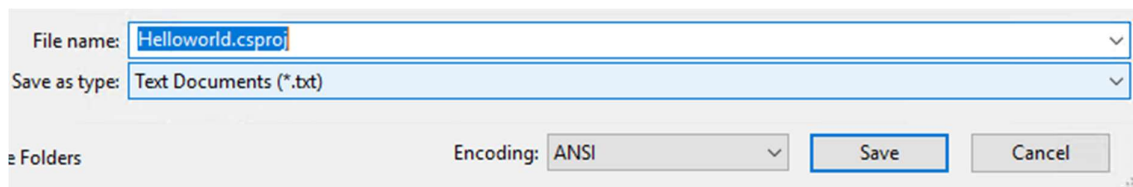
Create a minimal MSBuild Project File

❖ In the text editor, Create a new file and Insert ItemGrop node as a child element of the project node.
❖ Add a Target Node as a child element of the project node, Name the node Build
❖ Insert this task element as a child element of the Target node.

File Edit Format View Help

```xml
<Project xmlns="http://schemas.microsoft.com/developer/msbuild/2003">
    <PropertyGroup>
        <AssemblyName>MSBuildSample</AssemblyName>
        <OutputPath>Bin\</OutputPath>
    </PropertyGroup>
    <ItemGroup>
        <Compile Include="helloworld.cs"/>
    </ItemGroup>
    <Target Name="Build">
        <MakeDir Directories="$(OutputPath)" Condition="!Exists('$(OutputPath)')"/>
        <Csc Sources="@(Compile)" OutputAssembly="$(OutputPath)$(AssemblyName).exe"
    </Target>
</Project>
```

❖ Save this project file and name it Helloworld.csproj

File name: Helloworld.csproj

Save as type: Text Documents (*.txt)

e Folders   Encoding: ANSI   Save   Cancel

Build The Application

❖ **At cmd prompt type msbuild helloworld.csproj –t:Build**

```
PS C:\Users\devops13\Desktop\HelloWorld> msbuild .\Helloworld.csproj -t:Build
Microsoft (R) Build Engine version 16.4.0+e901037fe for .NET Framework
Copyright (C) Microsoft Corporation. All rights reserved.

Build started 7/28/2022 11:02:15 AM.
Project "C:\Users\devops13\Desktop\HelloWorld\Helloworld.csproj" on node 1 (Build target(s)).
Build:
  Creating directory "Bin\".
  C:\Program Files (x86)\Microsoft Visual Studio\2019\BuildTools\MSBuild\Current\Bin\Roslyn\csc.exe /out
  :Bin\MSBuildSample.exe helloworld.cs
Done Building Project "C:\Users\devops13\Desktop\HelloWorld\Helloworld.csproj" (Build target(s)).

Build succeeded.
    0 Warning(s)
    0 Error(s)

Time Elapsed 00:00:01.71
```

❖ Check whether Bin dir created or not, Type dir

```
ectory: C:\Users\devops13\Desktop\HelloWorld

          LastWriteTime          Length Name
          -------------          ------ ----
    7/28/2022  11:02 AM                 Bin
    7/28/2022  10:52 AM             231 Helloworld.cs
    7/28/2022  11:15 AM             492 Helloworld.csproj
```

❖ To Check MSBuildSample created are not go to DIR type cd bin

```
sers\devops13\Desktop\HelloWorld> cd .\Bin\
sers\devops13\Desktop\HelloWorld\Bin> ls


ectory: C:\Users\devops13\Desktop\HelloWorld\Bin

          LastWriteTime          Length Name
          -------------          ------ ----
    7/28/2022  11:16 AM            3584 MSBuildSample.exe
```

❖ Test the application by Typing MSBuildSample.exe

```
PS C:\Users\devops13\Desktop\HelloWorld\Bin> .\MSBuildSample.exe
Hello, world
```

To ADD BUILDS TARGETS

❖ In the project file add two targets and add DefaultTargets attribute to the opening
   project element

```xml
<Project DefaultTargets="Build" xmlns="http://schemas.microsoft.com/developer/msbuild/2003">
    <PropertyGroup>
        <AssemblyName>MSBuildSample</AssemblyName>
        <OutputPath>Bin\</OutputPath>
    </PropertyGroup>
    <ItemGroup>
        <Compile Include="Helloworld.cs"/>
    </ItemGroup>
    <Target Name="Build">
        <MakeDir Directories="$(OutputPath)" Condition="!Exists('$(OutputPath)')"/>
        <Csc Sources="@(Compile)" OutputAssembly="$(OutputPath)$(AssemblyName).exe"/>
    </Target>
    <Target Name="Clean">
        <Delete Files="$(OutputPath)$(AssemblyName).exe"/>
    </Target>
    <Target Name="Rebuild" DependsOnTargets="Clean;Build"/>
</Project>
```

TEST THE BUILD TARGETS:

- ❖ Build the default build, at the cmd prompt type msbuild helloworld.csproj – p:AssemblyName=Greeting

```
PS C:\Users\devops13\Desktop\HelloWorld> msbuild .\Helloworld.csproj -p:AssemblyName=Greetings
Microsoft (R) Build Engine version 16.4.0+e901037fe for .NET Framework
Copyright (C) Microsoft Corporation. All rights reserved.

Build started 7/28/2022 11:48:25 AM.
Project "C:\Users\devops13\Desktop\HelloWorld\Helloworld.csproj" on node 1 (default targets).
Build:
  C:\Program Files (x86)\Microsoft Visual Studio\2019\BuildTools\MSBuild\Current\Bin\Roslyn\csc.
  :Bin\Greetings.exe Helloworld.cs
Done Building Project "C:\Users\devops13\Desktop\HelloWorld\Helloworld.csproj" (default targets)


Build succeeded.
    0 Warning(s)
    0 Error(s)

Time Elapsed 00:00:01.80
PS C:\Users\devops13\Desktop\HelloWorld> msbuild .\Helloworld.csproj -p AssemblyName=Greetings
Microsoft (R) Build Engine version 16.4.0+e901037fe for .NET Framework
Copyright (C) Microsoft Corporation. All rights reserved.
```

- ❖ To verify that the \bin\folder contains both the MSBuildsample application both new and old

```
PS C:\Users\devops13\Desktop\HelloWorld> cd .\Bin\
PS C:\Users\devops13\Desktop\HelloWorld\Bin> ls


    Directory: C:\Users\devops13\Desktop\HelloWorld\Bin


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----        7/28/2022  11:48 AM           3584 Greetings.exe
-a----        7/28/2022  11:16 AM           3584 MSBuildSample.exe
```

- ❖ Test the greeting application ./Greeting.exe

```
PS C:\Users\devops13\Desktop\HelloWorld\Bin> .\Greetings.exe
Hello, world
```

- ❖ Delete MsBuildSample Application by typing msbuild helloworld.csproj –t:clean

```
PS C:\Users\devops13\Desktop\HelloWorld\Bin> cd ..
PS C:\Users\devops13\Desktop\HelloWorld> msbuild .\Helloworld.csproj -t:clean
Microsoft (R) Build Engine version 16.4.0+e901037fe for .NET Framework
Copyright (C) Microsoft Corporation. All rights reserved.

Build started 7/28/2022 11:53:02 AM.
Project "C:\Users\devops13\Desktop\HelloWorld\Helloworld.csproj" on node 1 (clean target(s)).
Clean:
  Deleting file "Bin\MSBuildSample.exe".
Done Building Project "C:\Users\devops13\Desktop\HelloWorld\Helloworld.csproj" (clean target(s))

Build succeeded.
    0 Warning(s)
    0 Error(s)

Time Elapsed 00:00:00.13
```

❖ Now delete the Greetings file by typing msbuild helloworld.csproj –t:clean –
   p:AssemblyName=Greetings

```
PS C:\Users\devops13\Desktop\HelloWorld> msbuild .\Helloworld.csproj -t:clean -p:AssemblyName=Greetings
Microsoft (R) Build Engine version 16.4.0+e901037fe for .NET Framework
Copyright (C) Microsoft Corporation. All rights reserved.

Build started 7/28/2022 12:00:32 PM.
Project "C:\Users\devops13\Desktop\HelloWorld\Helloworld.csproj" on node 1 (clean target(s)).
Clean:
  Deleting file "Bin\Greetings.exe".
Done Building Project "C:\Users\devops13\Desktop\HelloWorld\Helloworld.csproj" (clean target(s)).

Build succeeded.
    0 Warning(s)
    0 Error(s)

Time Elapsed 00:00:00.14
```

❖ To check whether the project clean or not got to \Bin\folder should be empty type dir
   Bin

```
PS C:\Users\devops13\Desktop\HelloWorld> cd .\Bin\
PS C:\Users\devops13\Desktop\HelloWorld\Bin> ls
```

❖ Type msbuild

```
PS C:\Users\devops13\Desktop\HelloWorld> msbuild
Microsoft (R) Build Engine version 16.4.0+e901037fe for .NET Framework
Copyright (C) Microsoft Corporation. All rights reserved.

Build started 7/28/2022 12:02:31 PM.
Project "C:\Users\devops13\Desktop\HelloWorld\Helloworld.csproj" on node 1 (default targets).
Build:
  C:\Program Files (x86)\Microsoft Visual Studio\2019\BuildTools\MSBuild\Current\Bin\Roslyn\csc.exe /out:Bin\MSBuildSample.exe Helloworld.cs
Done Building Project "C:\Users\devops13\Desktop\HelloWorld\Helloworld.csproj" (default targets).

Build succeeded.
    0 Warning(s)
    0 Error(s)

Time Elapsed 00:00:01.92
```

❖ Although a project is not specified, MSBuild builds the helloworld.csproj file because
   only one project file in the current folder, To check Type cd ./Bin/ and Type ls

```
PS C:\Users\devops13\Desktop\HelloWorld> cd .\Bin\
PS C:\Users\devops13\Desktop\HelloWorld\Bin> ls


    Directory: C:\Users\devops13\Desktop\HelloWorld\Bin


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----         7/28/2022  12:02 PM          3584 MSBuildSample.exe
```

BUILD INCREMENTALLY:

❖ In the project file, add these attributes to the opening Build target

```xml
<Target Name="Build" Inputs="@(Compile)" Outputs="$(OutputPath)$(AssemblyName).exe">
    <MakeDir Directories="$(OutputPath)" Condition="!Exists('$(OutputPath)')"/>
    <Csc Sources="@(Compile)" OutputAssembly="$(OutputPath)$(AssemblyName).exe"/>
</Target>
```

❖ Test the Build target by typing msbuild –v:d at the cmd prompt

```
PS C:\Users\devops13\Desktop\HelloWorld> msbuild -v:d
Microsoft (R) Build Engine version 16.4.0+e901037fe for .NET Framework
Copyright (C) Microsoft Corporation. All rights reserved.

Build started 7/28/2022 12:17:16 PM.
Project "C:\Users\devops13\Desktop\HelloWorld\Helloworld.csproj" on node 1 (default targets).
Building with tools version "Current".
Target "Build" in project "C:\Users\devops13\Desktop\HelloWorld\Helloworld.csproj" (entry point):
Skipping target "Build" because all output files are up-to-date with respect to the input files.
Input files: Helloworld.cs
Output files: Bin\MSBuildSample.exe
Done building target "Build" in project "Helloworld.csproj".
Done Building Project "C:\Users\devops13\Desktop\HelloWorld\Helloworld.csproj" (default targets).


Build succeeded.
    0 Warning(s)
    0 Error(s)

Time Elapsed 00:00:00.10
```