REPUBLIC POLYTECHNIC
DISCOVER. TRANSFORM. ACHIEVE

LESSON 12

File Upload & AI Cloud Service

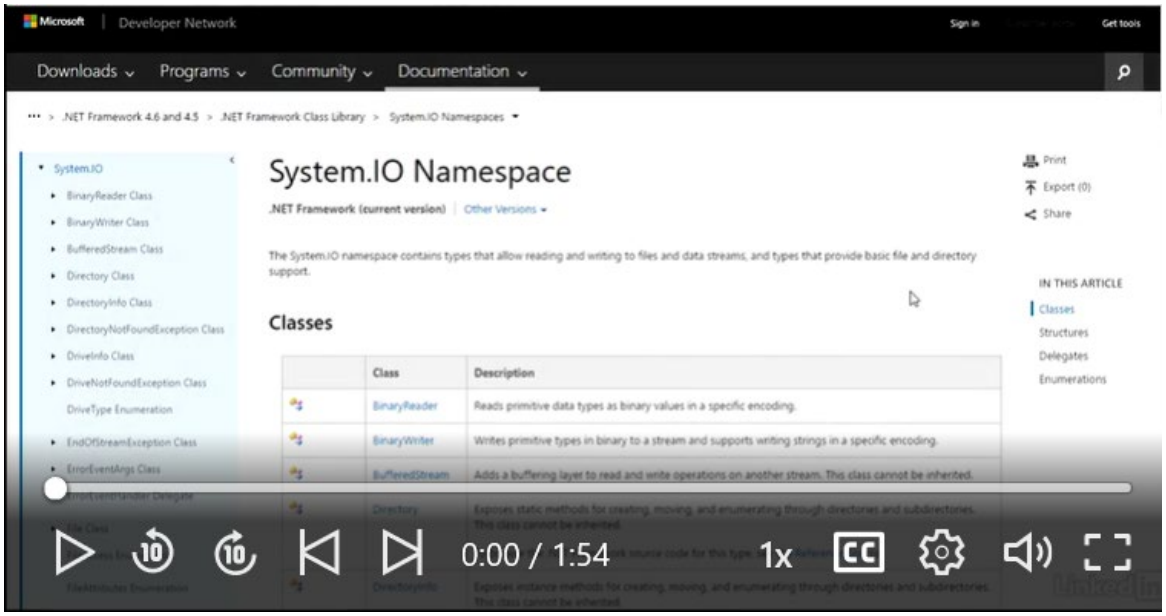
C286 ADVANCED WEB APPLICATION DEVELOPMENT IN .NET

AY2021 - 22 SEMESTER 2

Section 1: System.IO.Path & System.Environment Class

File I/O on C#

Watch this LinkedIn Learning video about File Input and Output in C#



TEST YOUR UNDERSTANDING:

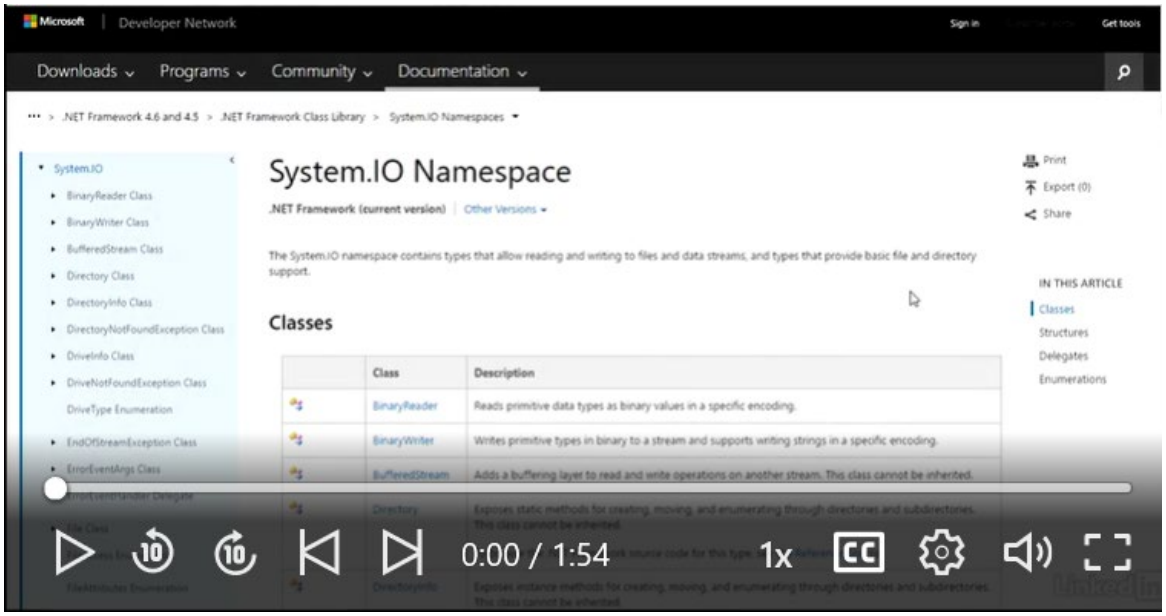
Which of the System.IO namespace class, is used to create directories? _____

Which of the System.IO namespace class, is used to manipulate files inside folders? _____

Which of the System.IO namespace class, is used to get information based on a certain path in the file system? _____

File I/O on C#

Watch this LinkedIn Learning video about File Input and Output in C#



TEST YOUR UNDERSTANDING:

Which of the System.IO namespace class, is used to create directories? Directory Class

Which of the System.IO namespace class, is used to manipulate files inside folders? File Class

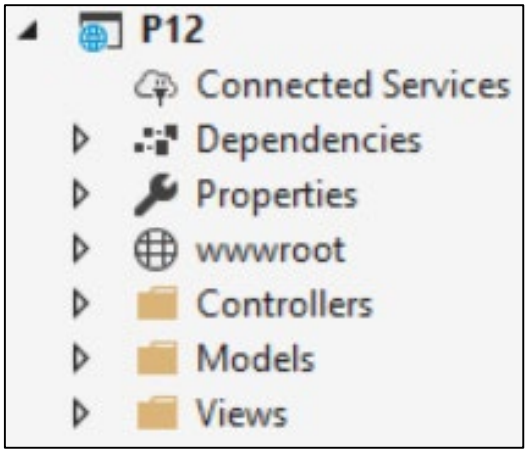
Which of the System.IO namespace class, is used to get information based on a certain path in the file system? Path Class

System.IO.Path Class

- Performs operations on strings that contain file or directory path information.
- Must import namespace **System.IO**
- Operations used in this module:
  - Combine(String,String): Combine two string into a path
    - *Path.Combine("C:","name.txt") => C:\name.txt*
    - *Path.Combine("D:\\Program Files","RP\\eQuest.exe") => D:\Program Files\RP\eQuest.exe*
  - GetExtension: Returns the extension of the specified path string.
    - *Path.GetExtension ("D:\\Program Files\\RP\\eQuest.exe") => .exe*
  - GetFileName: Returns the file name of the specified path string.
    - *Path.GetFileName ("D:\\Program Files\\RP\\eQuest.exe") => eQuest.exe*

System.Environment Class

- Provides information about, and means to manipulate, the current environment and platform.
- Must import namespace **System** (imported by default)
- Method used in this module:
  - CurrentDirectory: Gets or sets the fully qualified path of the current working directory.
    - *Environment.CurrentDirectory => C:\C286\P12*



Quick Check (Task 1):

1. *Path.Combine("C:","autoexec.bat")*

   C:\autoexec.bat

2. *Path.GetExtension("C:\\Documents\\grades.xlsx")*

   .xlsx

3. *Path.Combine("D:\\Software","Microsoft\\VSInstaller.exe")*

   D:\Software\Microsoft\VSInstaller.exe

4. *Path.GetFileName("E:\\Pictures\\family.png")*

   family.png

5. *Path.Combine(Environment.CurrentDirectory,"wwwroot\\images\\logo.png")*

   Suppose run in P12 and the solution directory is C:\C286

   C:\C286\P12\wwwroot\images\logo.png

Section 2: Upload File

Step#1 Add proper encoding type to form element in view

```
<form enctype="multipart/form-data"
      asp-controller="Exercise"
      asp-action="Exercise1"
      class="form-horizontal ">
```

Needed whenever there is a file upload

Step#2 Add input element with type="file" in view

```
<div class="form-group">
        <label class="control-label col-sm-2"
                for="picture">Picture:</label>
        <div class="col-sm-10">
            <input type="file" class="form-control" id="picture"
                   name="picture" accept=".png">
        </div>
    </div>
```

Step#3 Add a IFormFile variable in the action that receive the file

```
[HttpPost]
public IActionResult Exercise1(IFormFile picture)
{
  if (picture != null)
```

The variable name must match the name of the element

IFormFile is an interface representing a file sent through HttpRequest

```
<div class="form-group">
        <label class="control-label col-sm-2"
                for="picture">Picture:</label>
        <div class="col-sm-10">
            <input type="file" class="form-control" id="picture"
                   name="picture" accept=".png">
        </div>
    </div>
```

STEP#4 COPY CONTENT TO A PHYSICAL FILE

```
[HttpPost]
public IActionResult Exercise1(IFormFile picture)
{
    if (picture != null)
    {
        var filePath = Path.Combine(Environment.CurrentDirectory,
                                    "wwwroot\\exercise1\\picture.png");

        using (var stream = new FileStream(filePath, FileMode.Create))
        {
            picture.CopyTo(stream);
        }
    }
    else
        TempData["Msg"] = "Failed to upload picture";
    return View();
}
```

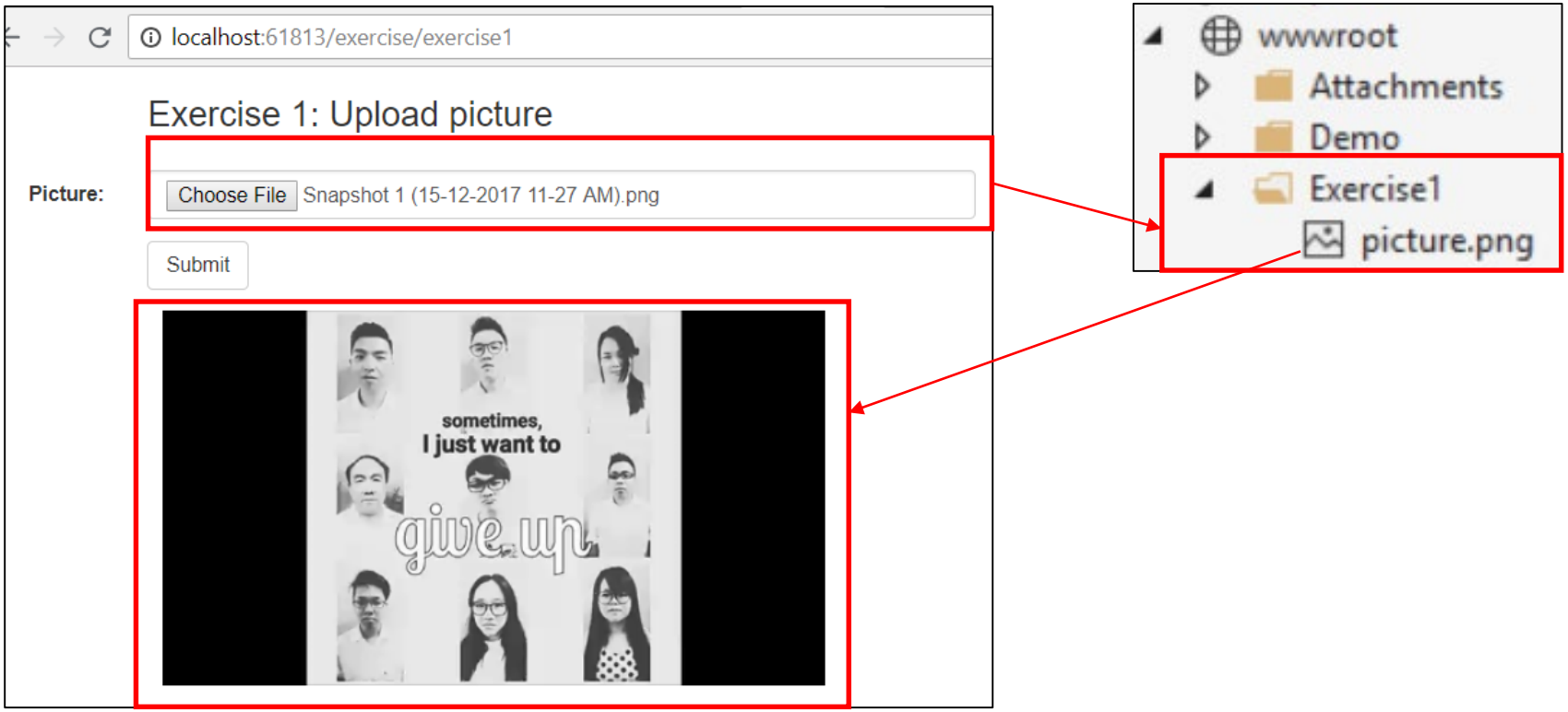
Form the physical file path

Copy the content to the physical file

Apprentice Activity

Activity 1: Upload a picture

Task 1: Verification



Section 3: Upload File through Ajax

HTML5 FormData interface

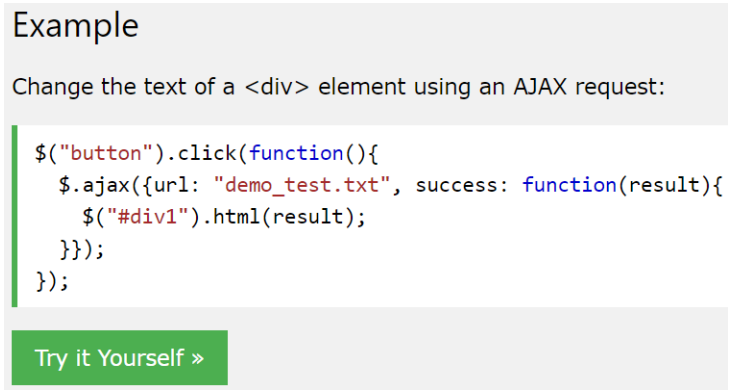
get(0) method returns the original javascript HTML element classes, in this case HTMLFormElement and HTMLInputElement

```
function uploadPicture() {
    var form = $("#fmPicture").get(0);
    var fileinput = $("#picture").get(0);
    var formdata = new FormData(form);
```

Create a FormData object based on the fmPicture HTMLFormElement object

- **FormData**, new in HTML5, allows the content of file in file input element to be serialized
- The form.serialize() method cannot serialize the content of file input elements

jQuery $.ajax() Method



1) Click the above screenshot
2) On the webpage, examine the code (and explanation), then click **Try it Yourself**
3) Another webpage will open, which includes implementation of this method

The code on the left "window" can be modified. Try to do that.

4) After interacting with the webpage code and clicking Run (green bg box), press the button "Get External Content"

TEST YOUR UNDERSTANDING:

In the code above, what triggers the $.ajax method() to be executed? _____

Which file contains / serves the data that will be displayed on the page when $.ajax is executed? _____

Which element will contain the new data / text? _____

jQuery $.ajax() Method

Example

Change the text of a element using an AJAX request:

```
$("button").click(function(){
  $.ajax({url: "demo_test.txt", success: function(result){
    $("#div1").html(result);
  }});
});
```

Try it Yourself »

1) Click the above screenshot
2) On the webpage, examine the code (and explanation), then click **Try it Yourself**
3) Another webpage will open, which includes implementation of this method

The code on the left "window" can be modified. Try to do that.

4) After interacting with the webpage code and clicking Run (green bg box), press the button "Get External Content"

TEST YOUR UNDERSTANDING:

In the code above, what triggers the $.ajax method() to be executed? The button click

Which file contains / serves the data that will be displayed on the page when $.ajax is executed? demo_test.txt

Which HTML element will contain the new data / text? The element with the id div1

Summary (recap) : $.getJSON and $.post are specialized forms of $.ajax.

jQuery $.ajax() method

```
$.ajax({
    url: "/api/Exercise",
    type: 'POST',
    data: formdata,
    success: function (data) {
        if (data == 0)
            alert("Picture upload failed!")
        else
            $("#imgEx2").attr("src","/Exercise2/" + data)
    },
    contentType: false,
    processData: false
});
```

URL to call

jQuery $.ajax() method

```
$.ajax({
    url: "/api/Exercise",
    type: 'POST',
    data: formdata,
    success: function (data) {
        if (data == 0)
            alert("Picture upload failed!")
        else
            $("#imgEx2").attr("src","/Exercise2/" + data)
    },
    contentType: false,
    processData: false
});
```

Http verb to use, in this case same in $.post uses HttpPost

jQuery $.ajax() method

```
$.ajax({
    url: "/api/Exercise",
    type: 'POST',
    data: formdata,
    success: function (data) {
        if (data == 0)
            alert("Picture upload failed!")
        else
            $("#imgEx2").attr("src","/Exercise2/" + data)
    },
    contentType: false,
    processData: false
});
```

data to post

jQuery $.ajax() method

```
$.ajax({
    url: "/api/Exercise",
    type: 'POST',
    data: formdata,
    success: function (data) {
        if (data == 0)
            alert("Picture upload failed!")
        else
            $("#imgEx2").attr("src","/Exercise2/" + data)
    },
    contentType: false,
    processData: false
});
```

Success callback function

jQuery $.ajax() method

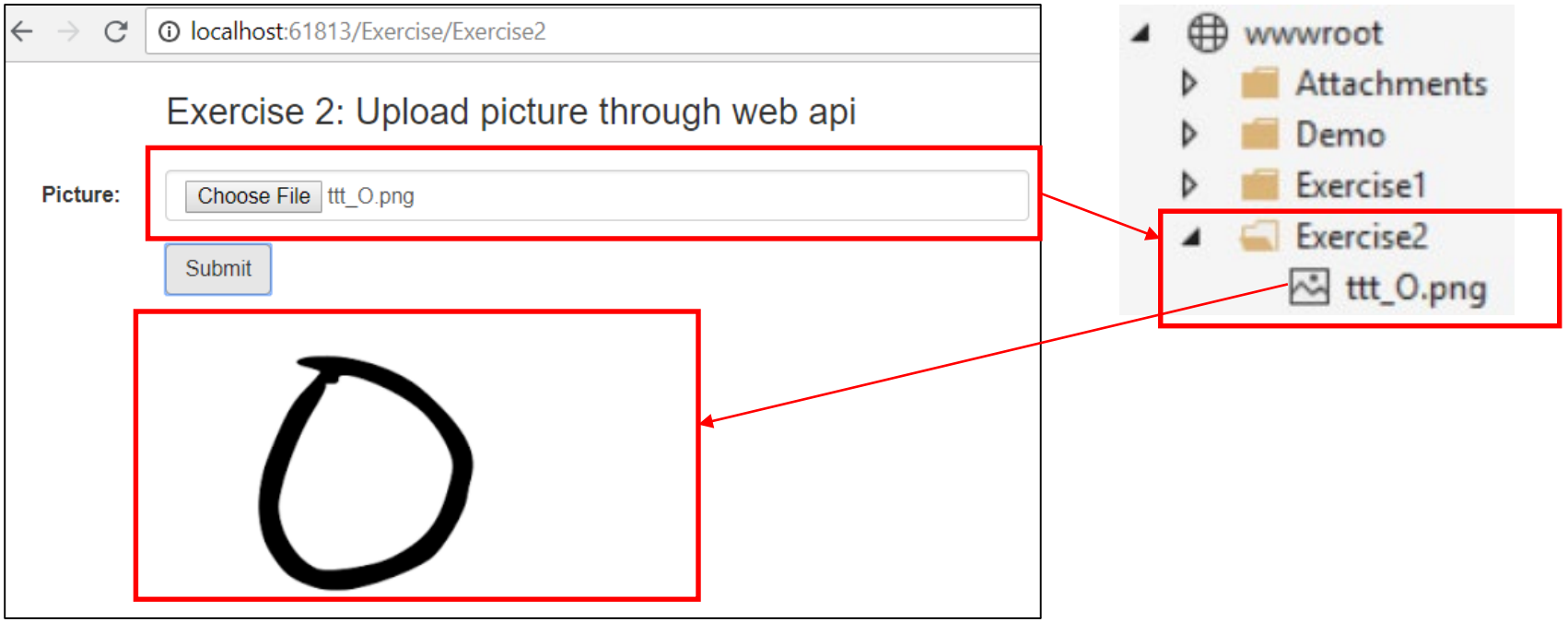
```
$.ajax({
    url: "/api/Exercise",
    type: 'POST',
    data: formdata,
    success: function (data) {
        if (data == 0)
            alert("Picture upload failed!")
        else
            $("#imgEx2").attr("src","/Exercise2/" + data)
    },
    contentType: false,
    processData: false
});
```

No manual setting of content type and extra processing of data, that's why we use $.ajax instead of $.post here. Extra processing of data will cause data not to be accepted at server side. Details are beyond scope of this module.

Apprentice Activity

Activity 2: Upload a picture through Ajax

Task 2: Verification



Answer to 2-1

```
[HttpPost]
public IActionResult Exercise2(IFormFile picture)
{
    if (picture != null)
    {
        var filePath = Path.Combine(Environment.CurrentDirectory, $"wwwroot\\exercise2\
          \{picture.FileName}");

        using (var stream = new FileStream(filePath, FileMode.Create))
        {
            picture.CopyTo(stream);
        }

        return Ok(picture.FileName);
    }
    else
        return Ok(0);
}
```

Answer to 2-2

```
function uploadPicture() {
    var form = $("#fmPicture").get(0); // retrieve the HTMLFormElement object
    var fileinput = $("#picture").get(0); // retrieve the HTMLInputElement
      object
    var formdata = new FormData(form);

    // insert your code here
    $.ajax({
        url: "/api/Exercise",
        type: 'POST',
        data: formdata,
        success: function (data) {
            if (data == 0)
                alert("Picture upload failed!")
            else
                $("#imgEx2").attr("src","/Exercise2/" + data)
        },
        contentType: false,
        processData: false
    });
}
```

Section 4:
AI Cloud Service

Azure AI Solutions

Watch this LinkedIn Learning video about the various Azure AI Solutions

TEST YOUR UNDERSTANDING:

What is Artificial Intelligence? _____

What is Machine Learning? _____

What are the Azure AI Services? _____

Azure AI Solutions

Watch this LinkedIn Learning video about the various Azure AI Solutions

TEST YOUR UNDERSTANDING:

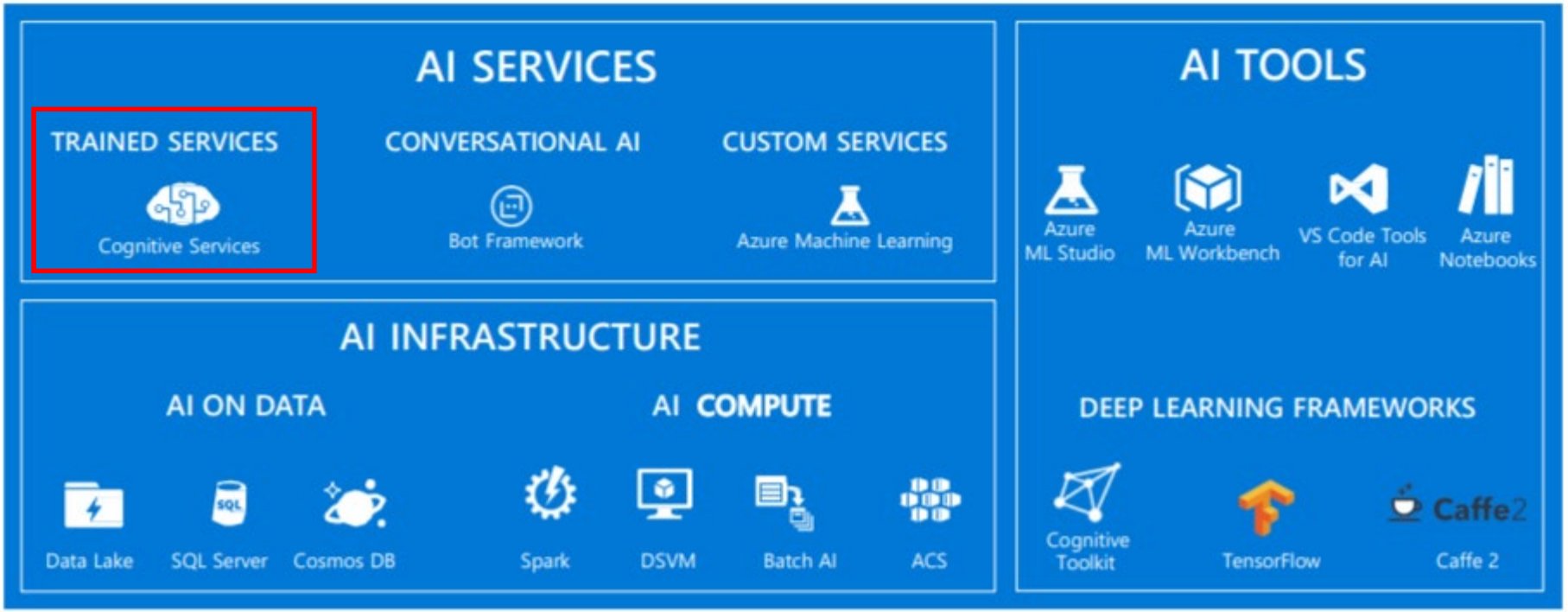
What is Artificial Intelligence? The science of making a computer behave in ways which match what we call human intelligence.

What is Machine Learning? A data science technique that feeds information and algorithms to a computer, which ten infers patterns and connections from the historical data.

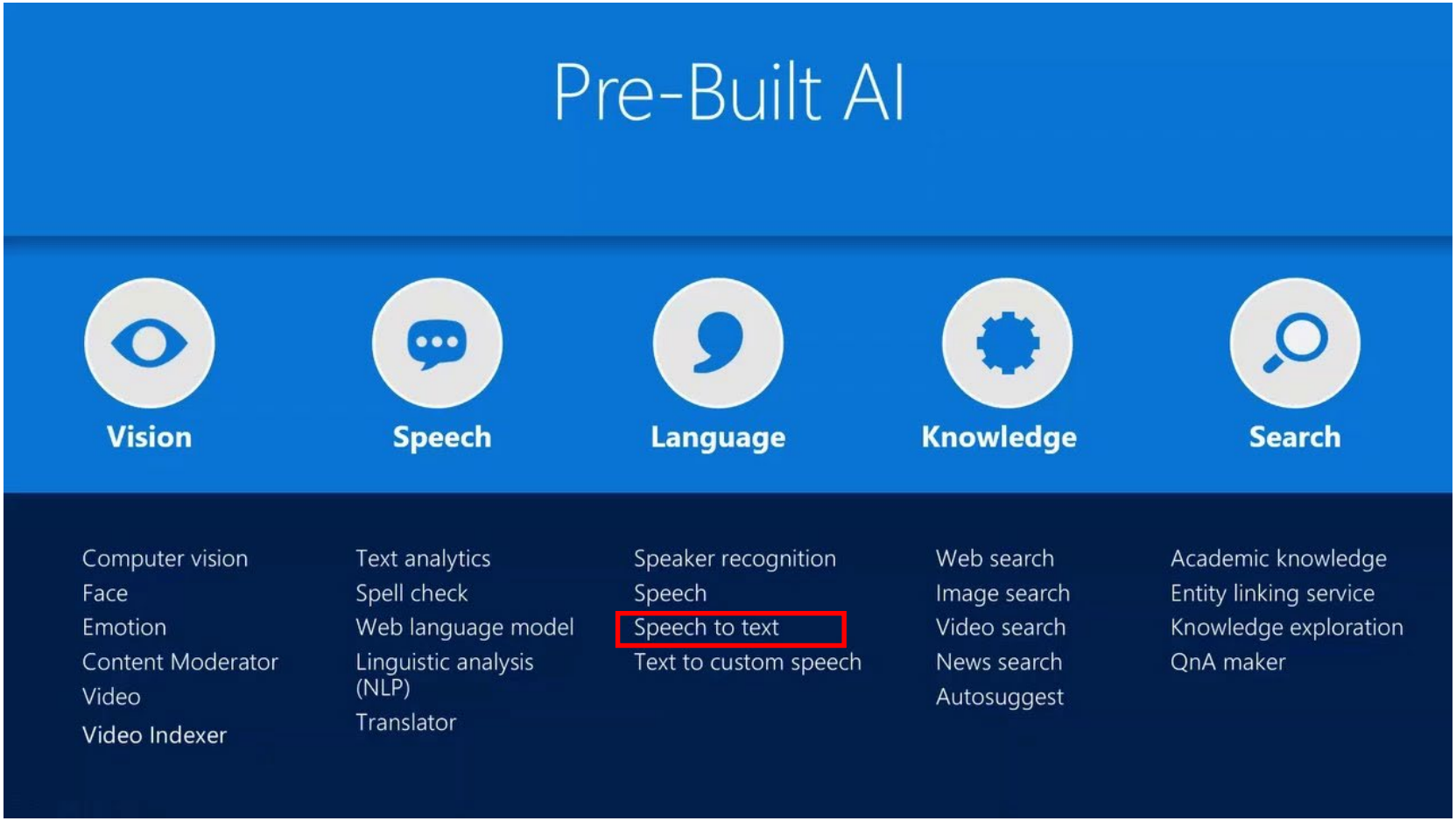
What are the Azure AI Services? Cognitive Services, Bot Service, Cognitive Search

Microsoft Azure AI Cloud Service

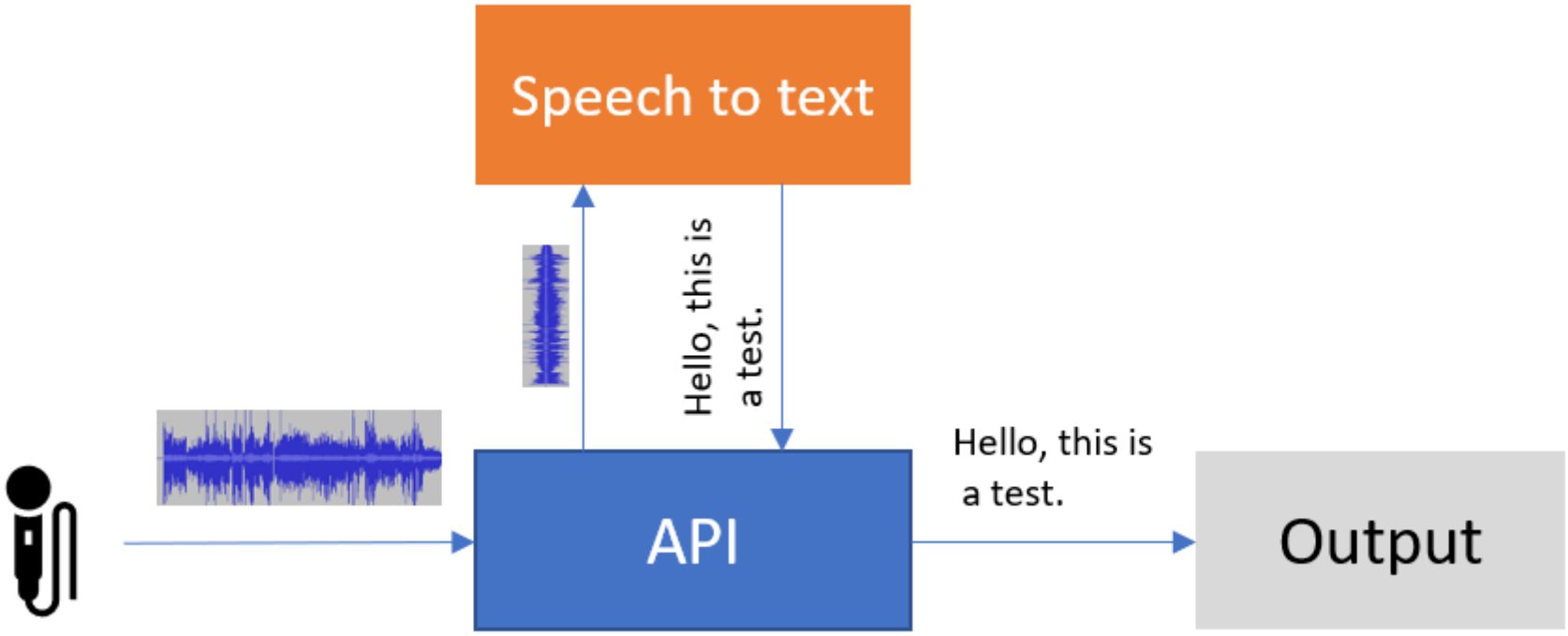
- AI – Artificial Intelligence
  - Current and future trend of IT
- Microsoft Azure offers a suite of AI cloud service



Speech-to-text AI Service



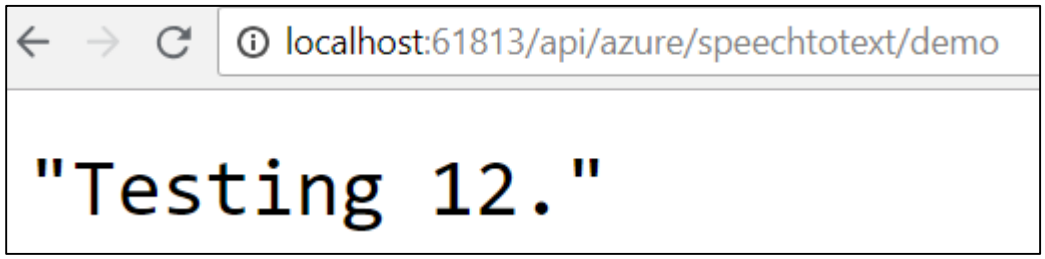
Speech-to-text AI Service



Apprentice Activity

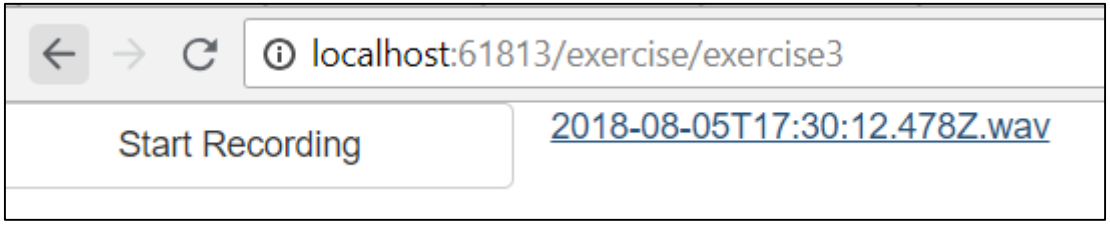
Activity 3: Complete Exercise 3 & 4 to convert a short WAV file to text

Verification Speech-to-text Demo



- The process might take some time, please be patient

Verification Simple Recorder Exercise 3



- Try to record a simple phrase like “C286 is fun”
- Download the file and play back to ensure the recording is clear

Verification Speech-to-text Exercise 4

References

- The ASP.NET Site
  - http://www.asp.net/mvc
- Introduction to ASP.NET Core
  - https://docs.asp.net/en/latest/mvc/index.html
- Introduction to JavaScript jQuery
  - http://www.w3schools.com/js/default.asp
  - http://www.w3schools.com/jquery/default.asp
- Azure Speech To Text
  - https://azure.microsoft.com/en-us/services/cognitive-services/speech-to-text/
- File Upload in .NET Core
  - https://docs.microsoft.com/en-us/aspnet/core/mvc/models/file-uploads?view=aspnetcore-3.1