Exercise: Computer Systems and Software - .NET 6.0

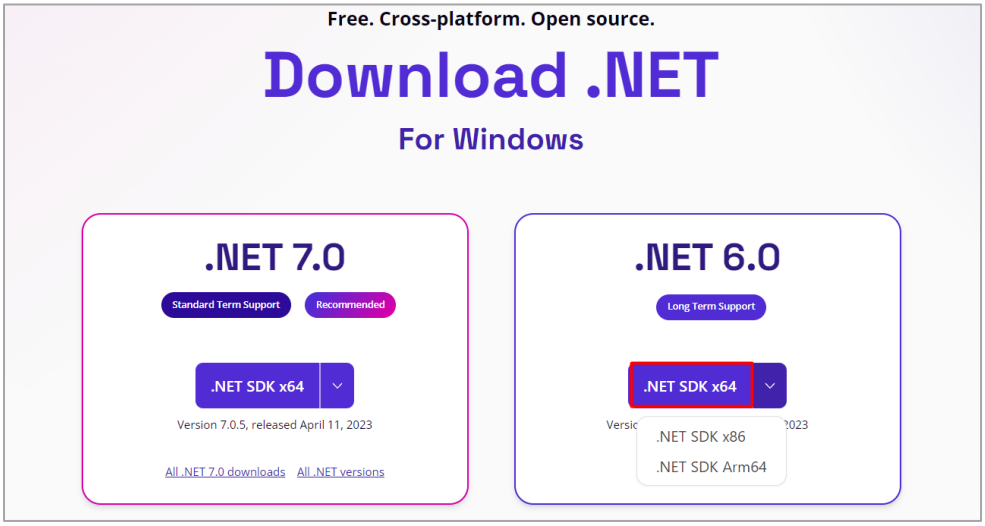
Problems for exercises and homework for the "Software Technologies" course @ Software University.

1. What is it and why do you need it?

.NET is a versatile, open-source development framework created by Microsoft that allows developers to build various types of applications, such as web, mobile, and desktop, using multiple programming languages like C# and F#. **QA engineers work with .NET** to test the functionality, performance, and compatibility of applications built on this platform, ensuring high-quality and reliable software across different environments and devices.

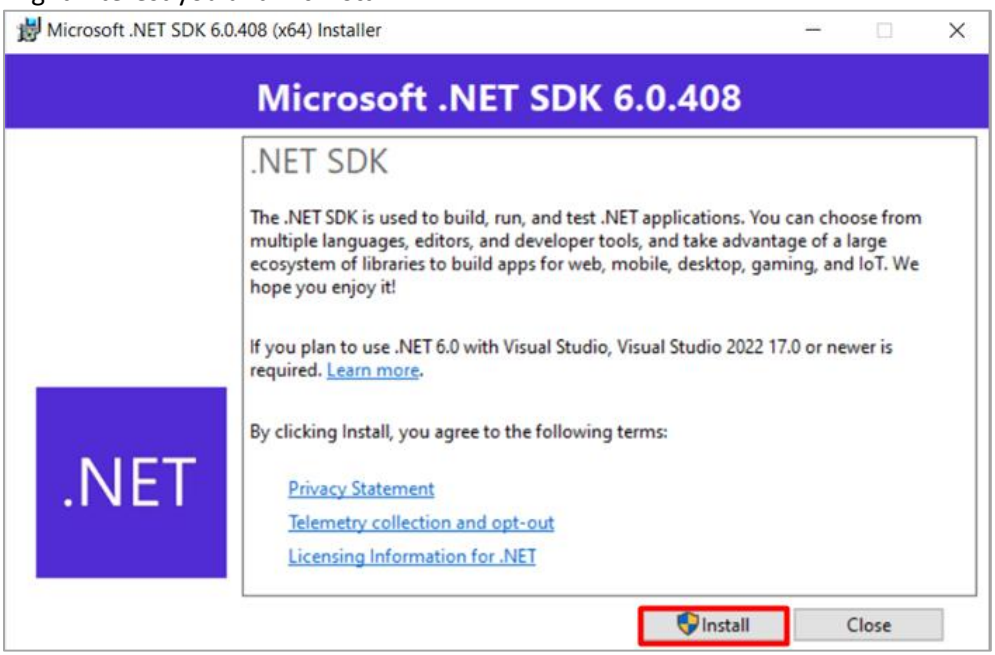
2. How to install it?

1. First, you will need to navigate to **https://dotnet.microsoft.com/en-us/download**
For this tutorial, we are installing **.NET 6.0 Long Term Support, x64 version. Click on the button ".NET SDK x64**

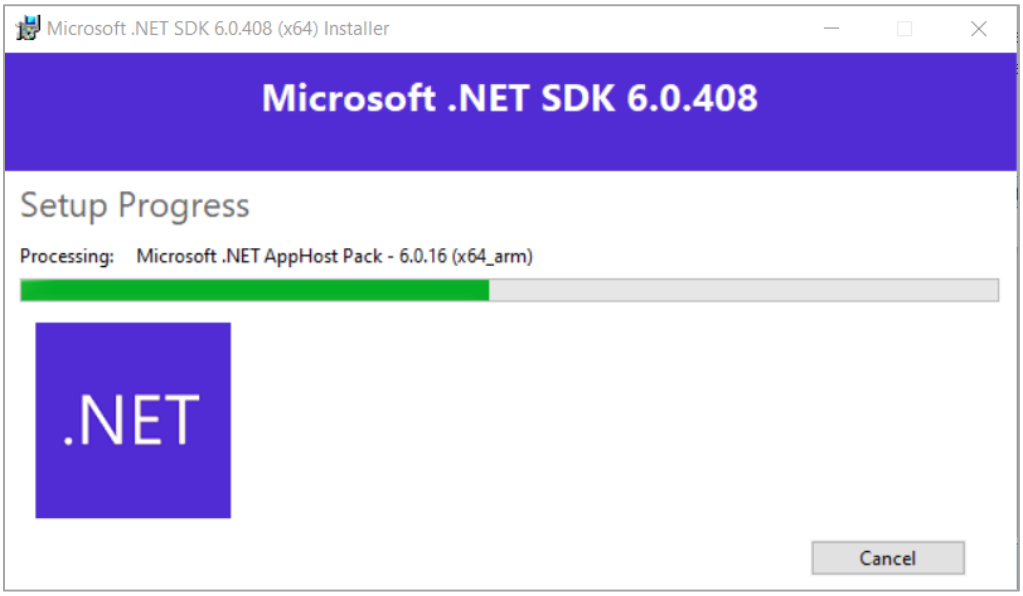


2. This will **download** the **installation file**.

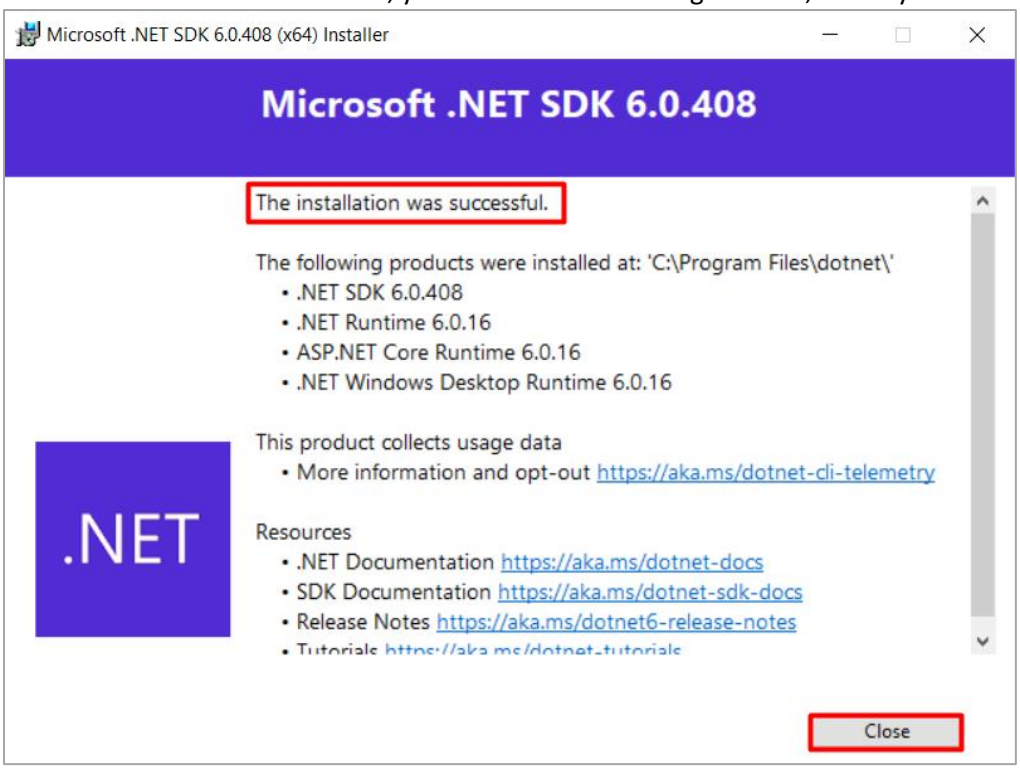
3. Open the **.exe file**. This will open the installer. Read the **Privacy Statement** and other provided information that might interest you and **hit Install**.



4. If prompted by Windows, **give permission to make changes** and your installation should begin.



5. If the installation **is successful**, you will see the following window, which you should **now close.**



3. Check .NET version

To check what was installed and its versions, type the following in the Command prompt:

```
dotnet sdk check
```

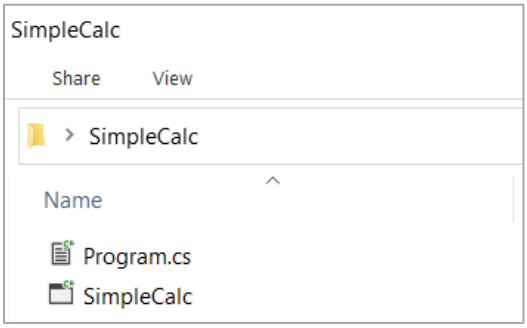
```
Command Prompt
Microsoft Windows [Version 10.0.19044.2728]
(c) Microsoft Corporation. All rights reserved.

C:\Users>dotnet sdk check
.NET SDKs:
Version      Status
---------------------------------------
6.0.408      Up to date.

Try out the newest .NET SDK features with .NET 8.0.100-preview.3.23178.7.

.NET Runtimes:
Name                            Version      Status
---------------------------------------------------------------------------
Microsoft.AspNetCore.App        6.0.16       Up to date.
Microsoft.NETCore.App           6.0.16       Up to date.
Microsoft.WindowsDesktop.App    6.0.16       Up to date.


The latest versions of .NET can be installed from https://aka.ms/dotnet-core-download.
 For more information about .NET lifecycles, see https://aka.ms/dotnet-core-support.
```

4. Build and run a simple calculator

We will build a simple calculator program, using .NET6.

You are given a .zip archive named "SimpleCalc". Unzip it and place the folder on your desktop /or a place of your choosing, but keep in mind, that you will have to navigate to it via Command Prompt, so choose an easy for typing path/.

The folder contains two files: **Program.cs** and **SimpleCalc.csproj.** The first one is the code for our application and the second one is a C# project file that defines a project's settings, dependencies, and build configurations for a .NET application. If you are extremely curious, you can open those with Notepad or Notepad++ to see what's inside, but that is not necessary.



Open the Command Prompt (by default Command Prompt opens in C:\Users\YourUsername) and navigate to the "SimpleCalc" folder. Here we are assuming that the folder is placed on your desktop. Type the following command:

```
cd desktop\simplecalc
```

Now we will build our calculator by running the following command:

```
dotnet build
```

```
C:\Users\[redacted]\Desktop\SimpleCalc>dotnet build
MSBuild version 17.5.0+6f08c67f3 for .NET
  Determining projects to restore...
  Restored C:\Users\[redacted]\Desktop\SimpleCalc\SimpleCalc.csproj (in 105 ms).
  SimpleCalc -> C:\Users\[redacted]\Desktop\SimpleCalc\bin\Debug\net6.0\SimpleCalc.dll

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

Time Elapsed 00:00:04.63
```

Next, we will run the calculator by typing the following command:

```
dotnet run
```

```
C:\Users\[redacted]\Desktop\SimpleCalc>dotnet run
Console Calculator in C#
------------------------

Type a number, and then press Enter
```

You can see our **simple calculator in action**.
Type a number. Type a second number. Choose an arithmetic action. Get a result.

```
Console Calculator in C#
------------------------

Type a number, and then press Enter
4
Type another number, and then press Enter
7
Choose an option from the following list:
        a - Add
        s - Subtract
        m - Multiply
        d - Divide
Your option? m
Your result: 4 * 7 = 28
Press any key to close the Calculator console app...
```