

Game Installer Creation

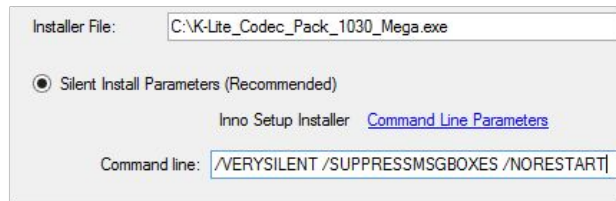
Jose Antonio Atencia Ordoñez

Installation

Configuration of a software or hardware with a view to making it usable with the computer

Installation typically involves code (program) being copied/generated from the installation files to new files on the local computer for easier access by the operating system, creating necessary directories, registering environment variables, providing separate program for un-installation etc.

- Attended installation
- Silent installation
- Unattended installation
- Headless installation
- Scheduled or automated installation
- Clean installation
- Network installation



Packaging

Creation of an executable (or file used by a service) that contains the files, registry and logic to install an application onto a device.

This packages must be prepared and meet the installation requirements for an specific environment.

- Microsoft Windows Installer: Setup.msi
- Legacy executables: Setup.exe
- Windows store: appx
- Batch files: Install.vbs/bat
- Loose Files / Raw Files
- .dll / .xla / .xlam / .ppam / .dotm, etc...

Advantages of packaging

Simplifies installations.

More ergonomic.

Upgrade and patch simplification.

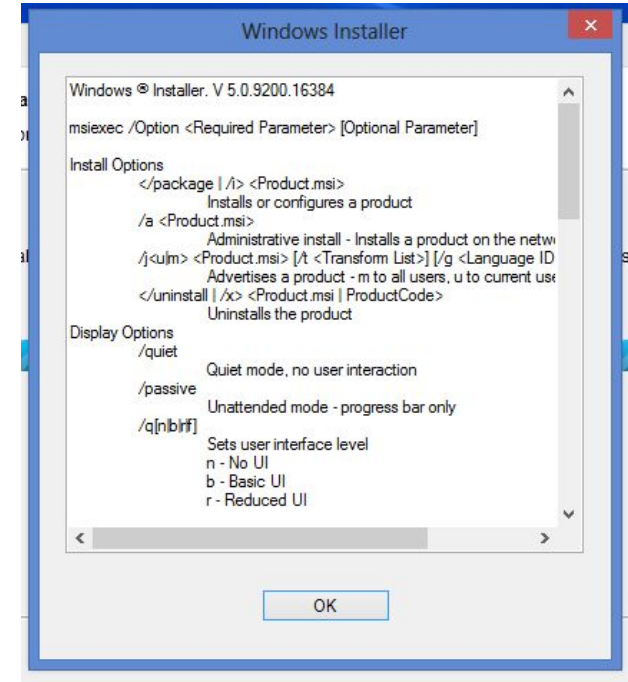
It has the digital certification of the application.

Prevents piracy.

Microsoft Windows Installer

Microsoft® Windows® Installer (MSI) is an implemented service as part of its desktop operating systems.

It resides on workstations and controls installing, uninstalling, patching, and repairing of software.



Installer tools

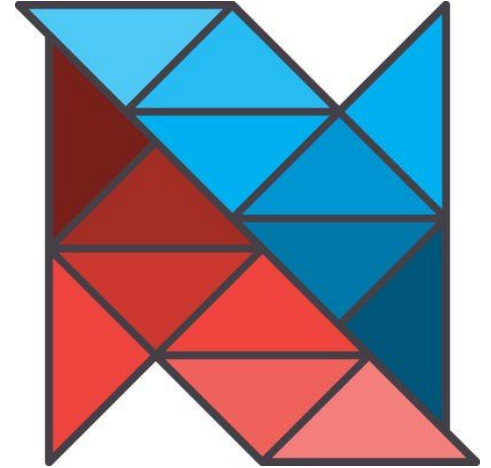
WIX



Advanced **Installer**



InstallShield®



WIX

<https://github.com/wixtoolset>

Why WIX?

You can create a binary MSI file from a regular text file

MSI binary is “compiled” from WiX text XML files

Good stability.

It has full integration in Visual Studio.

It's free & Open Source.



Setup WIX

We have to download and install this:

<https://github.com/wixtoolset/wix3/releases/tag/wix3112rtm>

<https://wixtoolset.org/releases/>

<https://github.com/tom-englert/Wax/releases/tag/v1.7>

I used 2022 extension, but you can download 2019



Wix Toolset Visual Studio 2022 Extension

WiX Toolset | 29,207 installs | ★★★★★ (7) | Free

Visual Studio integration for the WiX Toolset - the most powerful set of tools available to create your Windows installation experience.

Download

WiX Toolset v3.11.2 Latest Compare

robmen released this 19 Sep 2019 · 129 commits to develop since this release · wix3112rtm · 473562c

WiX v3.11.2 is the latest recommended maintenance release of WiX v3.11. It contains mitigations in WiX v3.11 for a vulnerability affecting Microsoft.Deployment.Compression.Cab.dll and Microsoft.Deployment.Compression.Zip.dll. We recommend upgrading to WiX v3.11.2 if your code references those assemblies.

For more information about the vulnerability, see [WiX v3.11.2 released](#).

The following bugs were fixed:

- DTF vulnerable to "Zip Slip" #6075 with fix by @robmen

Files

- wix311.exe is the installer for the WiX Toolset build tools.
- wix311.exe.zip contains the wix311.exe installer inside a .zip file, useful if your IT department prevents direct downloading of .exe files.
- wix311-binaries.zip contains the files that make up the WiX Toolset and is useful if you don't want to install the toolset -- for example, if you're just checking WiX into source control.
- wix311-debug.zip contains a reference copy of the WiX source code and symbol (.pdb) files, both of which are useful when debugging problems with WiX.

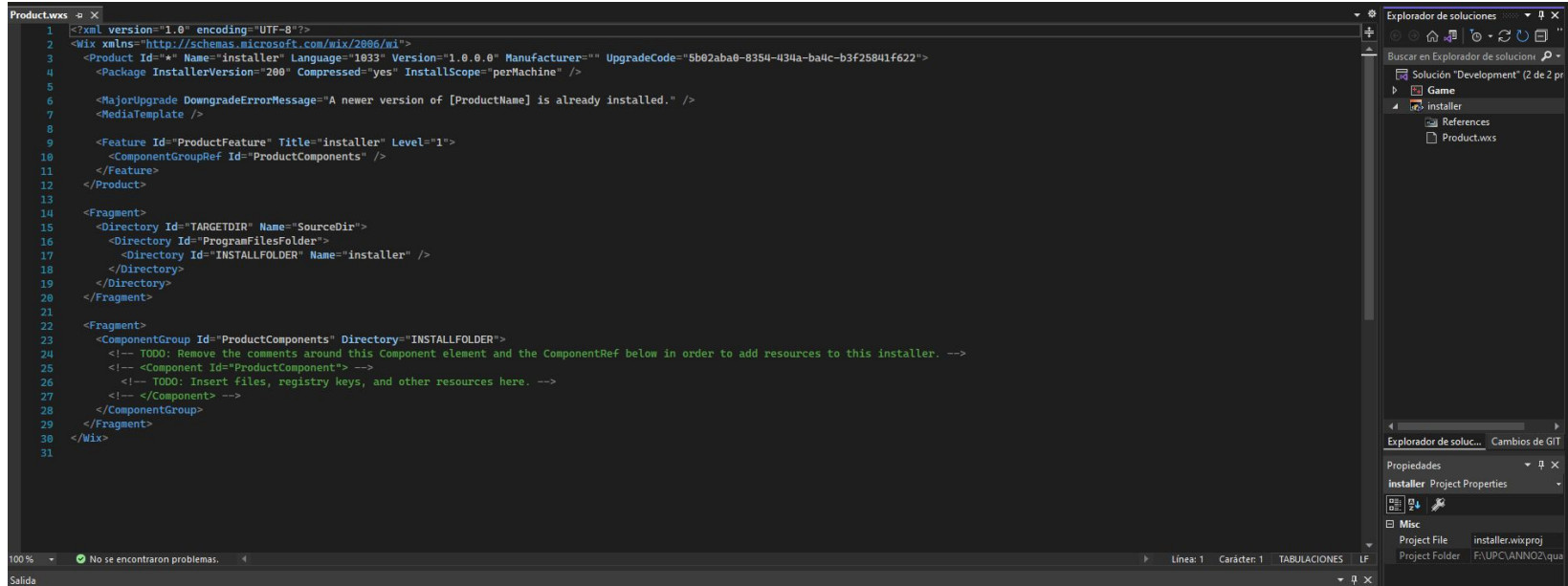
Assets

📄 wix311-binaries.zip	33.1 MB
📄 wix311-debug.zip	45.4 MB
📄 wix311.exe	26.7 MB
📄 wix311.exe.zip	26.1 MB
📄 Source code (.zip)	
📄 Source code (.tar.gz)	

Setup WIX

Then add a new project with visual studio.

The type of project needs to be the following: “Setup Project for WiX v3”.



Setup WIX - Todo 1

We have to add the .exe file of our application. For that, we have to:

<https://www.guidgen.com/> (GUID generator)

put this in Product.wxs:

```
<Component Id="Game.exe" Guid="48b7b907-12d6-4e82-a8f5-e92156e0c0c8">  
  <File Id="Game.exe" Source="..\Build\Release\Game.exe" KeyPath="yes"  
    Checksum="yes" />  
</Component>
```

We have to change the GUID to avoid duplications in updates

Setup WIX - Todo 1

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <Wix xmlns="http://schemas.microsoft.com/wix/2006/wi">
3   <Product Id="*" Name="MyInstaller" Language="1033" Version="1.0.0.0" Manufacturer="JA" UpgradeCode="fab5693c-335f-4101-b932-25747f5c1a8e">
4     <Package InstallerVersion="200" Compressed="yes" InstallScope="perMachine" />
5
6     <MajorUpgrade DowngradeErrorMessage="A newer version of [ProductName] is already installed." />
7     <MediaTemplate />
8
9     <Feature Id="ProductFeature" Title="MyInstaller" Level="1">
10       <ComponentGroupRef Id="ProductComponents" />
11     </Feature>
12   </Product>
13
14   <Fragment>
15     <Directory Id="TARGETDIR" Name="SourceDir">
16       <Directory Id="ProgramFilesFolder">
17         <Directory Id="INSTALLFOLDER" Name="MyInstaller" />
18       </Directory>
19     </Directory>
20   </Fragment>
21
22   <Fragment>
23     <ComponentGroup Id="ProductComponents" Directory="INSTALLFOLDER">
24       <!-- Todo 1 -->
25       <Component Id="Game.exe" Guid="48b7b907-12d6-4e82-a8f5-e92156e0c0c8">
26         <File Id="Game.exe" Source="..\Build\Release\Game.exe" KeyPath="yes" Checksum="yes" />
27       </Component>
28     </ComponentGroup>
29   </Fragment>
30 </Wix>
31
```

Setup WIX - Todo 1

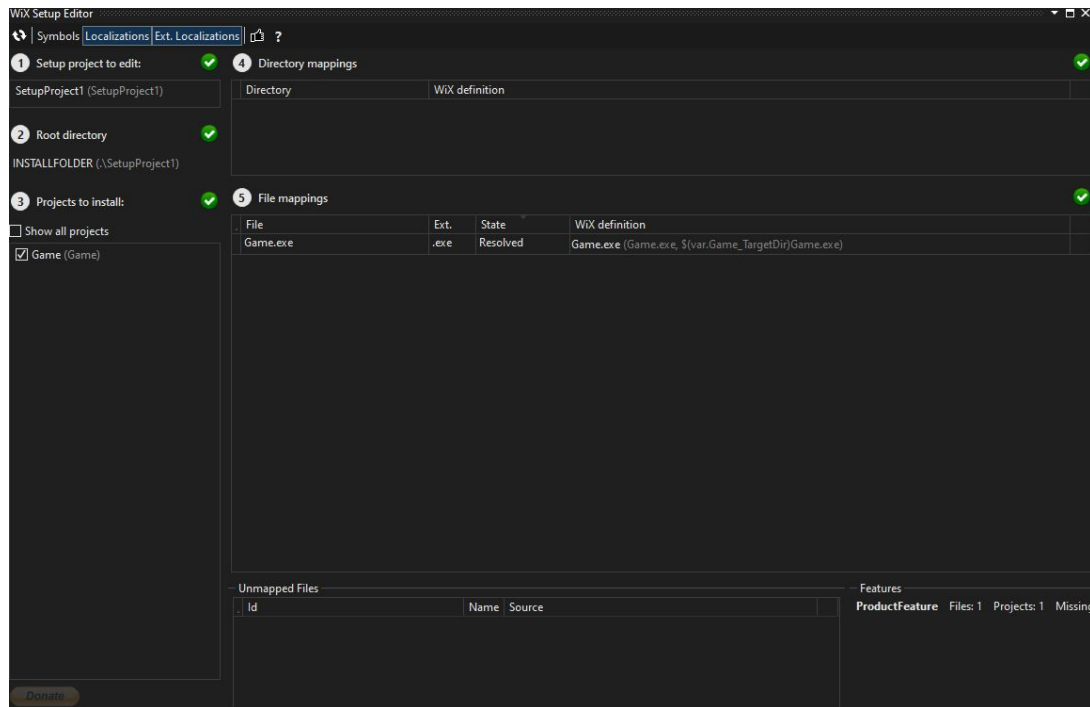
OR we can use WAX tool.

Go to tools, and Wix setup editor.

Select installfolder.

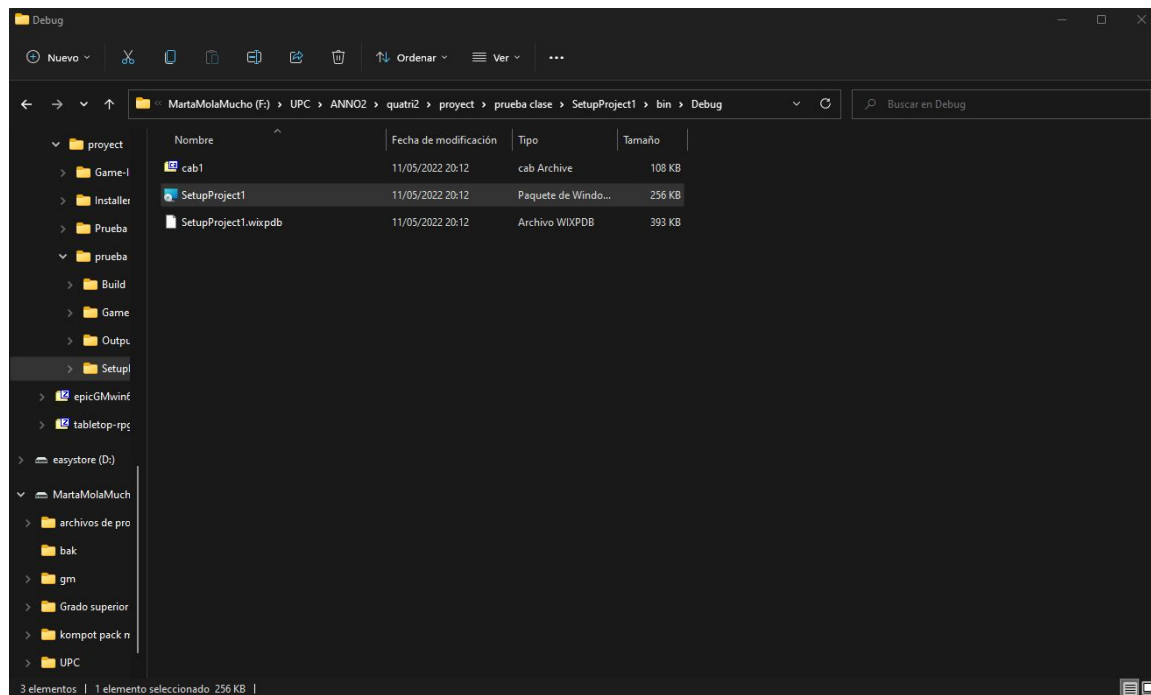
And select the game.

With this it will create it automatically.



Setup WIX - Todo 1

Compile and a folder with the .exe will be created.



Setup WIX - Todo 2

to add a shortcut, we will put this code in Product.wxs:

with this when you try to search the game in windows it will appear.

```
<!-- Todo 2 -->  
<ComponentRef Id="StartMenuShortcut" />
```

```
<!-- Todo 2 -->  
<Directory Id="ProgramMenuFolder">  
  <Directory Id="ApplicationProgramsFolder" Name="MyInstaller"/>  
</Directory>
```

```
<!-- Todo 2 -->  
<Fragment>  
  <DirectoryRef Id="ApplicationProgramsFolder">  
    <Component Id="StartMenuShortcut" Guid="ea2fc581-b635-4278-a8f1-1a81320d803a">  
      <Shortcut Id="ApplicationStartMenuShortcut"  
        Name="MyInstaller"  
        Description="My UPC Game Description"  
        Target="#"Game.exe]"  
        WorkingDirectory="INSTALLFOLDER"  
        Icon = "icon.ico"/>  
    <!-- Todo 4 -->  
    <RemoveFolder Id="RemoveProgramsFolder" On="uninstall"/>  
    <RegistryValue Root="HKCU" Key="Software\MyCompany\MyApplicationName" Name="installed" Type="integer" Value="1" KeyPath="yes"/>  
  </Component>  
</DirectoryRef>
```

Setup WIX - Todo 3

Now we will add a shortcut to the game.

Remember to generate a new guid for each one done.

```
<!-- Todo 3 -->  
<ComponentRef Id="DesktopShortcut" />
```









```
<!-- Todo 3 -->  
<DirectoryRef Id="DesktopFolder">  
  <Component Id="DesktopShortcut" Guid="c0f4eeec-8988-4c58-8a0a-2ebac04e2a2a">  
    <Shortcut Id="ApplicationDesktopShortcut"  
      Name="MyInstaller"  
      Description="My UPC Game Description"  
      Target="[#Game.exe]"  
      WorkingDirectory="INSTALLFOLDER"  
      Icon = "icon.ico"/>  
  </Component>  
</DirectoryRef>
```

Setup WIX - Todo 4

The game has no icon, so we will make it.

Create a new folder called assets and put the icon inside.

REMEMBER, the icon has to be a .ico, preferably 256x256 pixels.

Nombre	Fecha de modificacion	tipo	tamano
 assets	11/05/2022 21:45	Carpeta de archivos	
 bin	11/05/2022 17:10	Carpeta de archivos	
 obj	11/05/2022 17:11	Carpeta de archivos	
 HeatGeneratedFileList.wxs	11/05/2022 20:11	Archivo WXS	1 KB
 Product.wxs	11/05/2022 20:11	Archivo WXS	4 KB
 SetupProject1	11/05/2022 20:11	Acceso directo de ...	1 KB
 SetupProject1.wixproj	11/05/2022 20:07	Archivo WIXPROJ	4 KB
 SetupProject1.wixproj.bak	11/05/2022 19:12	Archivo BAK	4 KB

Setup WIX - Todo 4

Then, integrate this code:

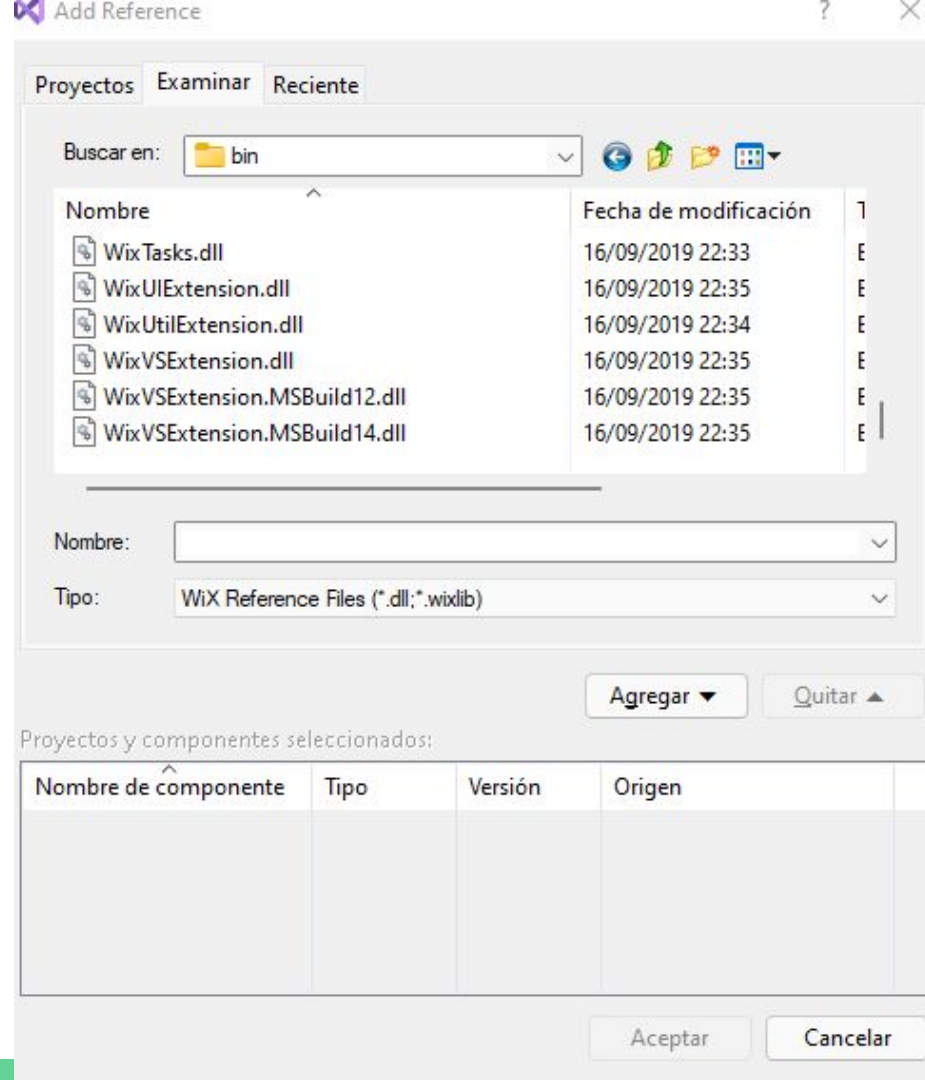
```
<!-- Todo 4 -->  
<Icon Id="icon.ico" SourceFile="assets\MyIcon.ico" />  
<Property Id="ARPPRODUCTICON" Value="icon.ico" />
```

```
<!-- Todo 2 -->  
<Fragment>  
  <DirectoryRef Id="ApplicationProgramsFolder">  
    <Component Id="StartMenuShortcut" Guid="ea2fc581-b635-4278-a8f1-1a81320d803a">  
      <Shortcut Id="ApplicationStartMenuShortcut"  
        Name="MyInstaller"  
        Description="My UPC Game Description"  
        Target="#Game.exe"  
        WorkingDirectory="INSTALLFOLDER"  
        Icon = "icon.ico"/>  
      <!-- Todo 4 -->  
      <RemoveFolder Id="RemoveProgramsFolder" On="uninstall"/>  
      <RegistryValue Root="HKCU" Key="Software\MyCompany\MyApplicationName" Name="installed" Type="integer" Value="1" KeyPath="yes"/>  
    </Component>  
  </DirectoryRef>  
  
  <!-- Todo 3 -->  
  <DirectoryRef Id="DesktopFolder">  
    <Component Id="DesktopShortcut" Guid="c0f4eeec-8988-4c58-8a0a-2ebac04e2a2a">  
      <Shortcut Id="ApplicationDesktopShortcut"  
        Name="MyInstaller"  
        Description="My UPC Game Description"  
        Target="#Game.exe"  
        WorkingDirectory="INSTALLFOLDER"  
        Icon = "icon.ico"/>  
      <!-- Todo 4 -->  
      <RemoveFolder Id="RemoveDesktopFolder" On="uninstall"/>  
      <RegistryValue Root="HKCU" Key="Software\MyCompany\MyApplicationName" Name="installed" Type="integer" Value="1" KeyPath="yes"/>  
    </Component>  
  </DirectoryRef>
```

Setup WIX - Todo 5

The installation is still a silent installation.
So we are going to make an user
agreement and an attended installation.
Go to your wix project and add the
WixUIExtension from wix folder

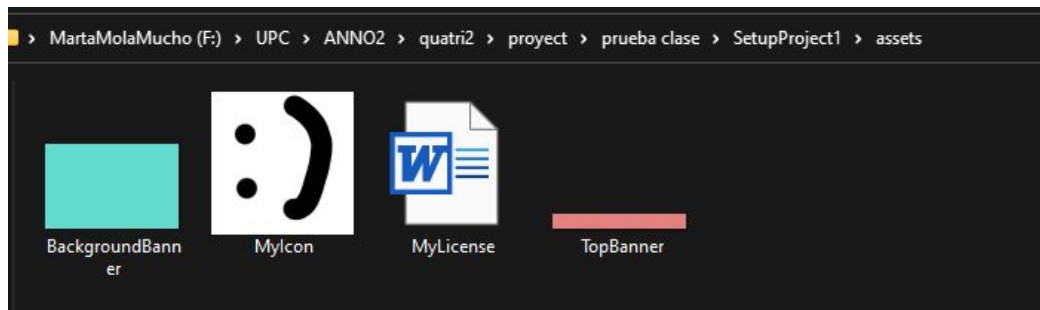
C:\Program Files (x86)\WiX Toolset v3.11\bin



Setup WIX - Todo 5

After that create 2 bmp that will be the background, one 493x312, the other 493x58, and a rtf file with the license or message you want to put in.

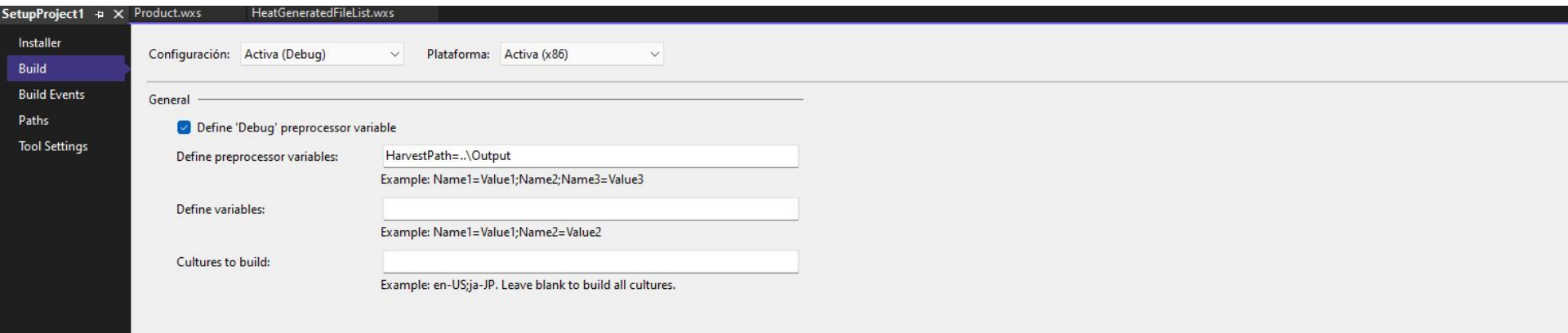
and put this code:



```
<!-- Todo 5 -->
<Property Id="WIXUI_INSTALLDIR" Value="INSTALLFOLDER" />
<UIRef Id="WixUI_InstallDir" />
<!-- Todo 5 -->
<WixVariable Id="WixUIBannerBmp" Value="assets\TopBanner.bmp" />
<WixVariable Id="WixUIDialogBmp" Value="assets\BackgroundBanner.bmp" />
<!-- Todo 5 -->
<WixVariable Id="WixUILicenseRtf" Value="assets\MyLicense.rtf" />
```

Setup WIX - Todo 6

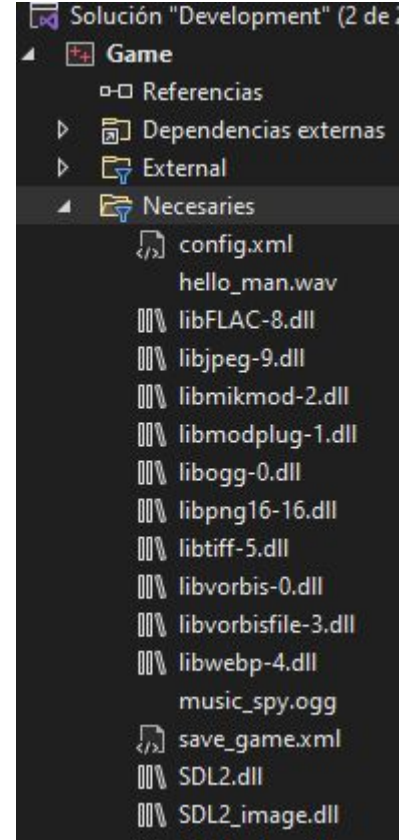
Finally, the installer is almost completed, we now have to in the properties of the Wix project, in build, put `HarvestPath=..\Output`



Setup WIX - Todo 6

As I am using the 2022 version and Wix is not fully compatible with, I had to create a reference to all the output folder in order to download the things.

With that it will be everything.



Setup WIX - 2019 version

With this version there's an alternative with dll files.

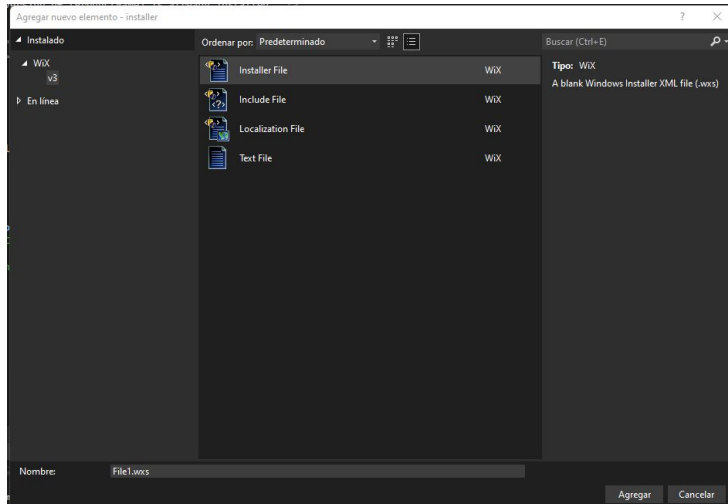
```
<!-- Todo 6 -->  
<!--<ComponentGroupRef Id="HeatGenerated" />-->
```

Setup WIX - 2019 version

Create an installer file and put HeatGeneratedFileList as the name.

This will harvest and include all our assets and dll files.

But we will need to put them manually,






```
<?xml version="1.0" encoding="utf-8"?>
<Wix xmlns="http://schemas.microsoft.com/wix/2006/wi">
  <Fragment>
    <DirectoryRef Id="INSTALLFOLDER">
      <Component Id="cmpFF71769B2BCCDDA5899221C0383FF13" Guid="*">
        <File Id="fil1475044D3B362116413DCC77EDFD27780" KeyPath="yes" Source="$(var.HarvestPath)\config.xml" />
      </Component>
      <Component Id="cmp1F57F0C183386F6CB76DFB6831324C61" Guid="*">
        <File Id="fil19FC49E6F7FAC0CE7407384FB2213594D" KeyPath="yes" Source="$(var.HarvestPath)\libFLAC-8.dll" />
      </Component>
      <Component Id="cmp53AC5F9E73E9F382D83B2DD88FC4A274" Guid="*">
        <File Id="fil1B0481D081032C11D9AA4357885DCFBFA" KeyPath="yes" Source="$(var.HarvestPath)\libjpeg-9.dll" />
      </Component>
      <Component Id="cmpB15AE4983A5B9E34AD6E1A3CBC321773" Guid="*">
        <File Id="fil1EB22510F8EE19E65BB48C689EC7F955E" KeyPath="yes" Source="$(var.HarvestPath)\libmikmod-2.dll" />
      </Component>
      <Component Id="cmpF6D3330C841E531C0D276FF890E3AA2C" Guid="*">
        <File Id="fil11959B543738A6E527F307AC2C6DAF656" KeyPath="yes" Source="$(var.HarvestPath)\libmodplug-1.dll" />
      </Component>
      <Component Id="cmpCF1E215A80FB6EC3FF19F7AE9C7107E5" Guid="*">
        <File Id="fil14F78FCDEDD085E2F3CD75BF27B00F761" KeyPath="yes" Source="$(var.HarvestPath)\libogg-0.dll" />
      </Component>
      <Component Id="cmp12F0C448A405134CF5FCE8B012ED00DC" Guid="*">
        <File Id="fil1420B14BA8DA79A96AF1D7EAD529FA341" KeyPath="yes" Source="$(var.HarvestPath)\libpng16-16.dll" />
      </Component>
      <Component Id="cmp02F18F0337B51135127B4818FC8BA4BF" Guid="*">
        <File Id="fil15F8964F487E16D3F850CFBCE50D6A5A3" KeyPath="yes" Source="$(var.HarvestPath)\libtiff-5.dll" />
      </Component>
      <Component Id="cmpB2478D88F2CA3BDA61B643B58AD5DC07" Guid="*">
        <File Id="fil154D57DAA0450ECA0E0BE1A84569502A9" KeyPath="yes" Source="$(var.HarvestPath)\libvorbis-0.dll" />
      </Component>
    </DirectoryRef>
  </Fragment>
</Wix>
```

Setup WIX - 2019 version

```
<Target Name="BeforeBuild">
  <HeatDirectory Directory="..\Output"
    PreprocessorVariable="var.HarvestPath"
    OutputFile="File1.wxs"
    ComponentGroupName="HeatGenerated"
    DirectoryRefId="INSTALLFOLDER"
    AutogenerateGuids="true"
    ToolPath="$ (WixToolPath) "
    SuppressFragments="true"
    SuppressRegistry="true"
    SuppressRootDirectory="true" />
</Target>
```

Add this in the installer.wixproj

 bin	10/05/2022 0:48	Carpeta de archivos	
 installer.wixproj	10/05/2022 0:48	Archivo WIXPROJ	2 KB
 Product.wxs	10/05/2022 0:48	Archivo WXS	2 KB

Virtualbox - setup

We will have to download the Iso for the Virtualbox

<https://developer.microsoft.com/en-us/microsoft-edge/tools/vms/>

After setting up the virtual machine, putting the ram, and location, we can drag the executable to the virtual machine and try it.

Documentation used

<https://github.com/wixtoolset>

https://wixtoolset.org/documentation/manual/v3/howtos/files_and_registry/add_a_file.html

<https://wixtoolset.org/documentation/manual/v3/>

https://wixtoolset.org/documentation/manual/v3/msbuild/target_reference/harvestdirectory.html

[https://en.wikipedia.org/wiki/Installation_\(computer_programs\)](https://en.wikipedia.org/wiki/Installation_(computer_programs))

https://en.wikipedia.org/wiki/Windows_Installer

<https://www.virtualbox.org/wiki/Downloads>

<https://www.add-in-express.com/docs/wix-setup-package.php>

<https://www.add-in-express.com/docs/wix-web-setup-project.php>

https://wixtoolset.org/documentation/manual/v3/votive/authoring_first_votive_project.html

<https://www.technical-recipes.com/2017/using-the-wix-toolset-to-create-installers-in-visual-studio-c-projects/>

<https://riptutorial.com/wix>