# Lab: Apache configuration for Windows

This **tutorial** provides step-by-step guidelines to setup your Apache environment. You will learn how to configure your web server. There will be a good explanation on how to run **java** programs powered by **CGI scripts** in order to process HTTP requests.

## Apache environment

#### Setup

Download the latest stable release of Apache HTTP Server from [here](http://www.apachelounge.com/download/). Use the appropriate version. If your OS is **64 bit(x64)** then use the **Win64** version otherwise use the **Win32** version. Install the software directly on **C:/**. The reason for this is to skip additional configuration because the expected directory is on **C:/**.

However, if you prefer to change the location then after the installation go to **$HOME$\conf\httpd.conf** where **$HOME$\ is your installation directory** and change the following directories:

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| **httpd.conf** |
| …  ServerRoot "**c:/Apache24**"  …  DocumentRoot "**c:/Apache24/htdocs**"  …  <Directory "**c:/Apache24/htdocs**">  …  ScriptAlias /cgi-bin/ "**c:/Apache24/cgi-bin/**"  …  <Directory "**c:/Apache24/cgi-bin**"> |

to your installation folder.  
**Skip this configuration part if you have already installed your server on C:/**.

#### Settings

After the installation is ready go to **$HOME$\conf\httpd.conf**.

1. Enable CGI Scripts

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| **httpd.conf** |
| …  <Directory "**c:/Apache24/cgi-bin**">  Options **+ExecCGI**  AddHandler cgi-script **.cgi** .pl  Options FollowSymLinks  Require all granted  </Directory>  … |

You need to have **Options +ExecCGI** and **AddHandler cgi-script .cgi**

1. Port setup
   1. Find **Listen 80** in the configuration file.

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| **httpd.conf** |
| …  **Listen 80**  **…** |

* 1. In the command line of your windows type **netstat –a**

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| **netstat –a** |

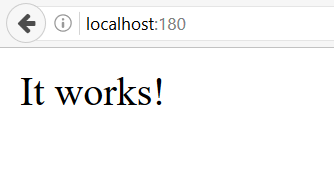
* 1. If port 80 is taken change to another free one

#### Additional requirements

Install **Cygwin** from [here](https://cygwin.com/install.html). Choose the appropriate version and put in any directory you want. We will use to execute scripts which invoke our java programs.

## Server start

If you have done the previous steps, then it is time to launch your web server. Go to **$HOME$\bin\httpd.exe** and start the **exe**. If everything is fine you should see a simple web page when you enter localhost: {**YOUR\_PORT**}. For example, my port is 180 and when I type localhost:180 in the browser I receive the following output:



## First java program

Write a simple java program that prints some text. For Example:

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| **Test.java** |
| **package** cgi;  **public class** Test {  **public static void** main(String[] args) {  String type = **"Content-Type: text/html\n\n"**;  String output =  **"<html>"** +  **"<body>"** +  **"<b>"** +  **"Hello from CGI!"** +  **"</b>"** +  **"</body>"** +  **"</html>"**;  System.***out***.println(type);  System.***out***.println(output);  } } |

Before we print anything we need to set the type of the page. In our case this is HTML. So we **must** print the content type first **"Content-Type: text/html\n\n"**

Copy the **.java** file and paste it to **$HOME$\cgi-bin\** where **$HOME$\** is the root of your Apache HTTPD server. Open it with notepad editor and remove the package. In my example I should remove **package** cgi;

In **$HOME$\cgi-bin\** start the command line and create a .class of our program by typing **javac Test.java** Make sure you have javac in your **environmental variable PATH.**

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| **javac Test.java** |

After you have a Test.class we need **a CGI script to invoke our java program.** So create a file called **invoker.cgi** in **$HOME$\cgi-bin\** with the following lines:

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| **invoker.cgi** |
| **#! C:\cygwin64\bin\bash.exe**  **java -cp ./ Test** |

The first line leads to **bash.exe** from the installation directory of Cygwin. Bash.exe will execute the script. The second line will execute our java program. **If you have installed Cygwin in a different directory, please type the correct path**.

At the end you should execute this URL: http://localhost: {**PORT**}/cgi-bin/invoker.cgi

