

CORSO DI LABORATORIO DI PROGRAMMAZIONE I

SETUP

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OUTLINE

- ▶ Java - Introduzione
- ▶ Java - Installazione

► Java - Un pò di storia (contemporanea)

Oct 2018	Oct 2017	Change	Programming Language	Ratings	Change
1	1		Java	17.801%	+5.37%
2	2		C	15.376%	+7.00%
3	3		C++	7.593%	+2.59%
4	5	▲	Python	7.156%	+3.35%

Sep 2019	Sep 2018	Change	Programming Language	Ratings	Change
1	1		Java	16.661%	-0.78%
2	2		C	15.205%	-0.24%
3	3		Python	9.874%	+2.22%
4	4		C++	5.635%	-1.76%
5	6	▲	C#	3.399%	+0.10%
6	5	▼	Visual Basic .NET	3.291%	-2.02%
7	8	▲	JavaScript	2.128%	-0.00%
8	9	▲	SQL	1.944%	-0.12%
9	7	▼	PHP	1.863%	-0.91%
10	10		Objective-C	1.840%	+0.33%

5.884%	+3.15%
3.485%	-0.37%
2.794%	+0.00%
2.280%	-0.73%
2.038%	+2.04%
1.500%	-0.17%

source: <https://www.tiobe.com/tiobe-index/> - Il TIOBE Programming Community Index (TPC Index), è un indicatore della popolarità dei linguaggi di programmazione; la classifica è compilata grazie ai dati ricavati dai vari motori di ricerca Google, Google Blogs, MSN, Yahoo!, Baidu, Wikipedia and

► Java - Un pò di storia (contemporanea)

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6	5	▼	Visual Basic .NET	3.291%	-2.02%
7	8	▲	JavaScript	2.128%	-0.00%
8	9	▲	SQL	1.944%	-0.12%
9	7	▼	PHP	1.863%	-0.91%
10	10		Objective-C	1.840%	+0.33%

Very Long Term History

To see the bigger picture, please find below the positions of the top 10 programming languages of many years back. Please note that these are *average* positions for a period of 12 months.

Programming Language	2019	2014	2009	2004	1999	1994	1989
Java	1	2	1	1	9	-	-
C	2	1	2	2	1	1	1
Python	3	7	5	6	23	21	-
C++	4	4	3	3	2	2	2
Visual Basic .NET	5	9	-	-	-	-	-
C#	6	5	6	7	18	-	-
JavaScript	7	8	8	8	16	-	-
PHP	8	6	4	5	-	-	-
SQL	9	-	-	89	-	-	-
Objective-C	10	3	29	37	-	-	-
Perl	17	11	7	4	3	10	19
Lisp	32	15	17	13	13	5	3
Pascal	222	16	14	88	6	3	21

► Java - Un pò di storia (contemporanea)

PYPL Popularity of Programming Language

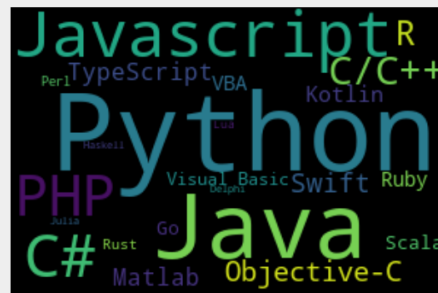
Worldwide, Sept 2019 compared to a year ago:

Rank	Change	Language	Share	Trend
1		Python	29.21 %	+4.6 %
2		Java	19.9 %	-2.2 %
3		Javascript	8.39 %	+0.0 %
4		C#	7.23 %	-0.6 %
5		PHP	6.69 %	-1.0 %
6		C/C++	5.8 %	-0.4 %
7		R	3.91 %	-0.2 %
8		Objective-C	2.63 %	-0.7 %
9		Swift	2.46 %	-0.3 %
10		Matlab	1.82 %	-0.2 %
11	↑	TypeScript	1.77 %	+0.2 %
12	↑↑↑↑↑	Kotlin	1.55 %	+0.6 %
13		VBA	1.44 %	-0.0 %
14	↓↓↓	Ruby	1.4 %	-0.2 %
15	↑↑	Go	1.2 %	+0.3 %
16	↓↓	Scala	1.14 %	-0.1 %
17	↓↓	Visual Basic	1.05 %	-0.1 %
18	↑↑	Rust	0.66 %	+0.3 %

The PYPL Popularity of Programming Language Index is created by analyzing how often language tutorials are searched on Google.

The more a language tutorial is searched, the more popular the language is assumed to be. It is a leading indicator. The raw data comes from Google Trends.

If you believe in collective wisdom, the PYPL Popularity of Programming Language index can help you decide which language to study, or which one to use in a new software project.



source: <https://pypl.github.io/PYPL.html> - Il PYPL index è stato creato per analizzare quanto spesso vengono cercati tutorial (su google) di un particolare

► Java - Quale versione?

```
francescogallo — -bash — 140x40
Last login: Wed Oct  3 17:09:43 on ttys000
gdp_workstation:~ francescogallo$ java -version
openjdk version "1.8.0_121"
OpenJDK Runtime Environment (Zulu 8.20.0.5-macosx) (build 1.8.0_121-b15)
OpenJDK 64-Bit Server VM (Zulu 8.20.0.5-macosx) (build 1.8.0_121-b15)
gdp_workstation:~ francescogallo$
```

Amministratore: Windows PowerShell

```
PS C:\Windows\system32> java -version
java version "13" 2019-09-17
Java(TM) SE Runtime Environment (build 13+33)
Java HotSpot(TM) 64-Bit Server VM (build 13+33, mixed mode, sharing)
PS C:\Windows\system32>
```

► Link utili:

► Java

► Java - Quale versione?

```
Last login: Wed Oct 3 10:10:10 EDT 2018
gdp_workstation:~ f
openjdk version "1.8.0_202"
OpenJDK Runtime Env
OpenJDK 64-Bit Serv
gdp_workstation:~ f
```

► Link utili:

► Java

Oracle Technology Network / Java / Java SE / Downloads

Overview Downloads Documentation Community Technologies Training

Java SE Development Kit 8 Downloads

Thank you for downloading this release of the Java™ Platform, Standard Edition Development Kit (JDK™). The JDK is a development environment for building applications, applets, and components using the Java programming language.

The JDK includes tools useful for developing and testing programs written in the Java programming language and running on the Java platform.

Important Oracle JDK License Update

The Oracle JDK License has changed for releases starting April 16, 2019.

The new Oracle Technology Network License Agreement for Oracle Java SE is substantially different from prior Oracle JDK licenses. The new license permits certain uses, such as personal use and development use, at no cost -- but other uses authorized under prior Oracle JDK licenses may no longer be available. Please review the terms carefully before downloading and using this product. An FAQ is available [here](#).

Commercial license and support is available with a low cost [Java SE Subscription](#).

Oracle also provides the latest OpenJDK release under the open source [GPL License](#) at [jdk.java.net](#).

See also:

- Java Developer Newsletter: From your Oracle account, select **Subscriptions**, expand **Technology**, and subscribe to **Java**.
- Java Developer Day hands-on workshops (free) and other events
- Java Magazine

JDK 8u221 [checksum](#)

Java SDKs and Tools

- [Java SE](#)
- [Java EE and Glassfish](#)
- [Java ME](#)
- [Java Card](#)
- [NetBeans IDE](#)
- [Java Mission Control](#)

Java Resources

- [Java APIs](#)
- [Technical Articles](#)
- [Demos and Videos](#)
- [Forums](#)
- [Java Magazine](#)
- [Developer Training](#)
- [Tutorials](#)
- [Java.com](#)

► Java - Quale versione?

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OpenJDK 64-Bit Server VM (Zulu 8.20.0.5-macosx) (build 1.8.0_121-b15)
gdp_workstation:~ francescogallo$
```

Amministratore: Windows PowerShell

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Java(TM) SE Runtime Environment (build 13+33)
Java HotSpot(TM) 64-Bit Server VM (build 13+33, mixed mode, sharing)
PS C:\Windows\system32>
```

► Link utili:


- [Java](#)

- [Documentation](#)

JAVA - INTRODUZIONE

Trail: Learning the Java Language

docs.oracle.com/javase/tutorial/java/index.html



The Java™ Tutorials

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« Previous • Trail • Next »

Home Page

The Java Tutorials have been written for JDK 8. Examples and practices described in this page don't take advantage of improvements introduced in later releases and might use technology no longer available. See [JDK Release Notes](#) for information about new features, enhancements, and removed or deprecated options for all JDK releases.

Trail: Learning the Java Language

This trail covers the fundamentals of programming in the Java programming language.

-  **Object-Oriented Programming Concepts** teaches you the core concepts behind object-oriented programming: objects, messages, classes, and inheritance. This lesson ends by showing you how these concepts translate into code. Feel free to skip this lesson if you are already familiar with object-oriented programming.
-  **Language Basics** describes the traditional features of the language, including variables, arrays, data types, operators, and control flow.
-  **Classes and Objects** describes how to write the classes from which objects are created, and how to create and use the objects.
-  **Annotations** are a form of metadata and provide information for the compiler. This lesson describes where and how to use annotations in a program effectively.
-  **Interfaces and Inheritance** describes interfaces—what they are, why you would want to write one, and how to write one. This section also describes the way in which you can derive one class from another. That is, how a *subclass* can inherit fields and methods from a *superclass*. You will learn that all classes are derived from the `Object` class, and how to modify the methods that a subclass inherits from superclasses.
-  **Numbers and Strings** This lesson describes how to use `Number` and `String` objects. The lesson also shows you how to format data for output.
-  **Generics** are a powerful feature of the Java programming language. They improve the type safety of your code, making more of your bugs detectable at compile time.
-  **Packages** are a feature of the Java programming language that help you to organize and structure your classes and their relationships to one another.

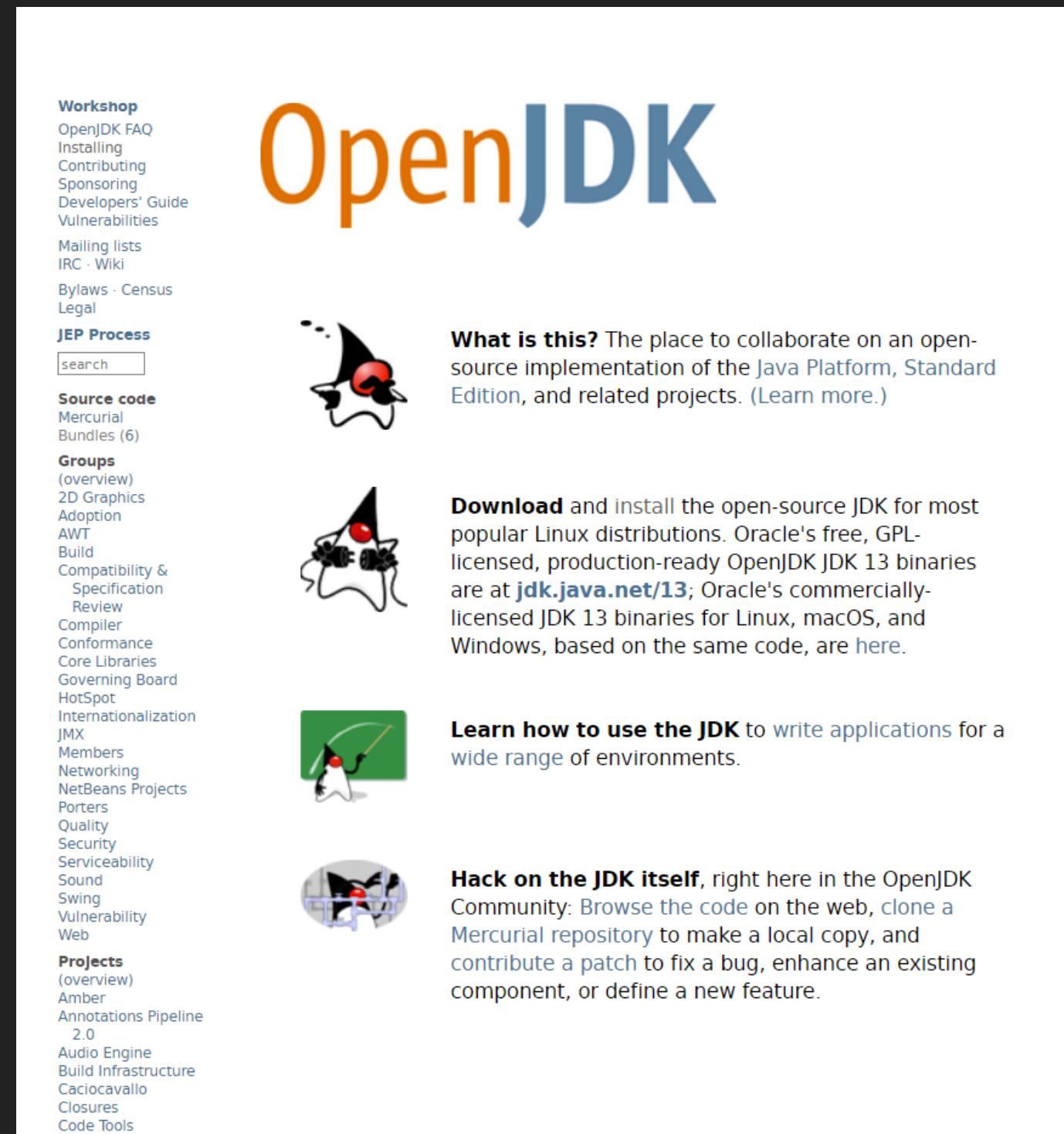
« Previous • TOC • Next »

► Java - Quale sistema operativo?

► Linux

► Windows

► Mac



The screenshot shows the OpenJDK website layout. On the left is a navigation menu with sections: Workshop, JEP Process, Source code, Groups, and Projects. The main content area features the 'OpenJDK' logo at the top. Below it are four rows, each with a Java mascot icon and a text block: 1. 'What is this?' with a mascot wearing a graduation cap, explaining it's an open-source implementation. 2. 'Download' with a mascot wearing a graduation cap, providing links for Linux, macOS, and Windows. 3. 'Learn how to use the JDK' with a mascot holding a golf club, explaining how to write applications. 4. 'Hack on the JDK itself' with a mascot at a computer, explaining how to contribute to the code.

Workshop
OpenJDK FAQ
Installing
Contributing
Sponsoring
Developers' Guide
Vulnerabilities

Mailing lists
IRC · Wiki

Bylaws · Census
Legal

JEP Process

Source code
Mercurial
Bundles (6)

Groups
(overview)
2D Graphics
Adoption
AWT
Build
Compatibility & Specification Review
Compiler
Conformance
Core Libraries
Governing Board
HotSpot
Internationalization
JMX
Members
Networking
NetBeans Projects
Porters
Quality
Security
Serviceability
Sound
Swing
Vulnerability
Web

Projects
(overview)
Amber
Annotations Pipeline 2.0
Audio Engine
Build Infrastructure
Caciocavallo
Closures
Code Tools
Cocoa

OpenJDK

What is this? The place to collaborate on an open-source implementation of the Java Platform, Standard Edition, and related projects. ([Learn more.](#))

Download and install the open-source JDK for most popular Linux distributions. Oracle's free, GPL-licensed, production-ready OpenJDK JDK 13 binaries are at jdk.java.net/13; Oracle's commercially-licensed JDK 13 binaries for Linux, macOS, and Windows, based on the same code, are [here](#).

Learn how to use the JDK to [write applications](#) for a wide range of environments.

Hack on the JDK itself, right here in the OpenJDK Community: Browse the [code on the web](#), clone a Mercurial repository to make a local copy, and contribute a [patch](#) to fix a bug, enhance an existing component, or define a new feature.

► Java - Quale sistema operativo?

- Linux
- Windows
- Mac

The screenshot shows the 'JDK 13 General-Availability Release' page. On the left is a sidebar with navigation links. The main content area includes sections for 'Schedule, status, & features (OpenJDK)', 'Documentation' (with links to Release notes and API Javadoc), and 'Build 33 (2019/8/9): General Availability' (with links to Changes in this build and Issues addressed in this build). A table lists open-source builds for Linux/x64, macOS/x64, and Windows/x64. The Linux/x64 row is highlighted with a red rounded rectangle. Below the table, a note states that commercial builds from Oracle are available under a non-open-source license at the Oracle Technology Network.

jdk.java.net

GA Releases
JDK 13

Early-Access Releases
JDK 14
Jpackage
Loom
OpenJFX
Panama
Valhalla
JMC

Reference Implementations
Java SE 13
Java SE 12
Java SE 11
Java SE 10
Java SE 9
Java SE 8
Java SE 7

Feedback
Report a bug

Archive

JDK 13 General-Availability Release

Schedule, status, & features (OpenJDK)

Documentation

- Release notes
- API Javadoc

Build 33 (2019/8/9): General Availability

- Changes in this build
- Issues addressed in this build

These open-source builds are provided under the GNU General Public License, version 2, with the Classpath Exception.

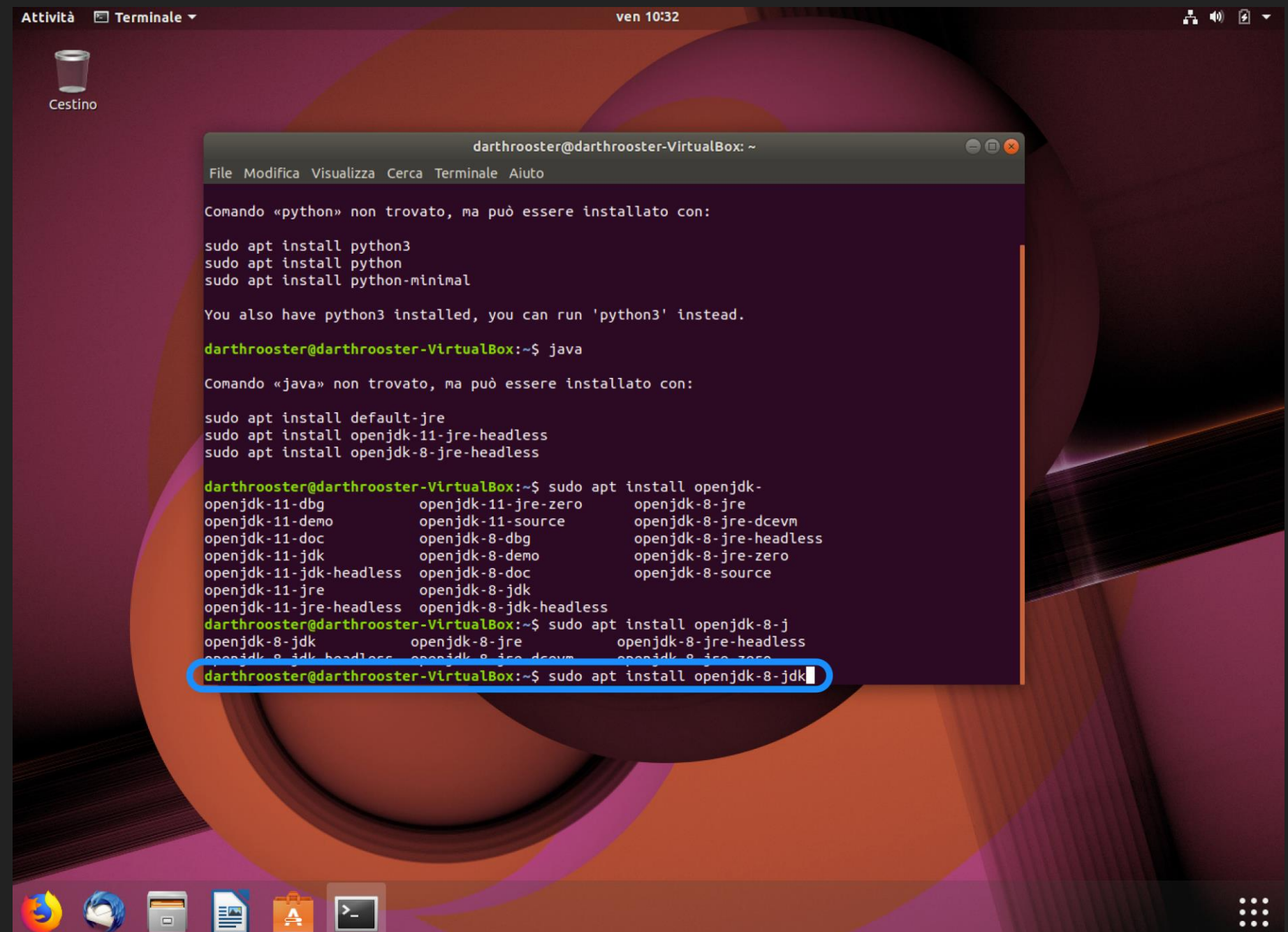
Linux/x64	tar.gz (sha256)	196363513 bytes
macOS/x64	tar.gz (sha256)	189943388
Windows/x64	zip (sha256)	195897761

Commercial builds of JDK 13 from Oracle under a non-open-source license, for a wider range of platforms, can be found at the Oracle Technology Network.

[OpenJDK Download](#)

► Java - Quale sistema operativo?

- Linux
- Windows
- Mac



The screenshot shows a Linux desktop with a terminal window open. The terminal displays the following text:

```
darthrooster@darthrooster-VirtualBox: ~  
File Modifica Visualizza Cerca Terminale Aiuto  
  
Comando «python» non trovato, ma può essere installato con:  
  
sudo apt install python3  
sudo apt install python  
sudo apt install python-minimal  
  
You also have python3 installed, you can run 'python3' instead.  
  
darthrooster@darthrooster-VirtualBox:~$ java  
  
Comando «java» non trovato, ma può essere installato con:  
  
sudo apt install default-jre  
sudo apt install openjdk-11-jre-headless  
sudo apt install openjdk-8-jre-headless  
  
darthrooster@darthrooster-VirtualBox:~$ sudo apt install openjdk-  
openjdk-11-dbg          openjdk-11-jre-zero      openjdk-8-jre  
openjdk-11-demo         openjdk-11-source        openjdk-8-jre-dcevm  
openjdk-11-doc           openjdk-8-dbg            openjdk-8-jre-headless  
openjdk-11-jdk           openjdk-8-demo           openjdk-8-jre-zero  
openjdk-11-jdk-headless  openjdk-8-doc            openjdk-8-source  
openjdk-11-jre           openjdk-8-jdk            openjdk-8-jdk-headless  
openjdk-11-jre-headless  openjdk-8-jdk-headless  
darthrooster@darthrooster-VirtualBox:~$ sudo apt install openjdk-8-j  
openjdk-8-jdk           openjdk-8-jre            openjdk-8-jre-headless  
openjdk-8-jdk-headless  openjdk-8-jre-dcevm      openjdk-8-jre-zero  
darthrooster@darthrooster-VirtualBox:~$ sudo apt install openjdk-8-jdk
```

The terminal window is titled "darthrooster@darthrooster-VirtualBox: ~". The desktop background is a dark, abstract pattern. The top bar shows "Attività", "Terminale", and the time "ven 10:32". The bottom bar contains icons for Firefox, a mail client, a file manager, a document, a shopping cart, and a terminal icon.

- ▶ Java - Quale sistema operativo?

- ▶ **Linux**

Download: `jdk-8u192-ea-bin-b04-linux-x64-01_aug_2018.tar.gz`

- ▶ Windows

- ▶ Mac

JAVA - INSTALLAZIONE

► Java - Quale sistema operativo?

► Linux

► Windows

► Mac

The screenshot shows the Oracle JDK 8u192 Early-Access Builds page. The page includes a sidebar with navigation links, a main content area with download instructions, and a table of download links for various operating systems. The 'Linux/x64' link is circled in blue.

JDK 8u192 Early-Access Builds

[Schedule, status, & features \(OpenJDK\)](#)

Documentation

- Test results

Latest build: 04 (2018/8/3)

- Issues addressed in this build

Oracle JDK builds

You must accept the [Early Adopter Development License Agreement](#) in order to download this software.

☐ Accept License Agreement
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Linux/arm32 vfp hflt	tar.gz	75864037 bytes
Linux/arm64 vfp hflt	tar.gz	72852387
Linux/i586	tar.gz	138065707
Linux/x64	tar.gz	136858877
macOS/x64	dmg	199821590
Solaris/SPARC	tar.gz	98016447
Solaris/x64	tar.gz	95623406
Windows/i586	exe	153692528
Windows/x64	exe	163997040

Oracle JRE builds

You must accept the [Early Adopter Development License Agreement](#) in order to download this software.

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Linux/i586	tar.gz	85373093 bytes
Linux/x64	tar.gz	84082552
macOS/x64	dmg	79335500
Solaris/SPARC	tar.gz	53944727
Solaris/x64	tar.gz	51586774
Windows/i586	exe	66337656

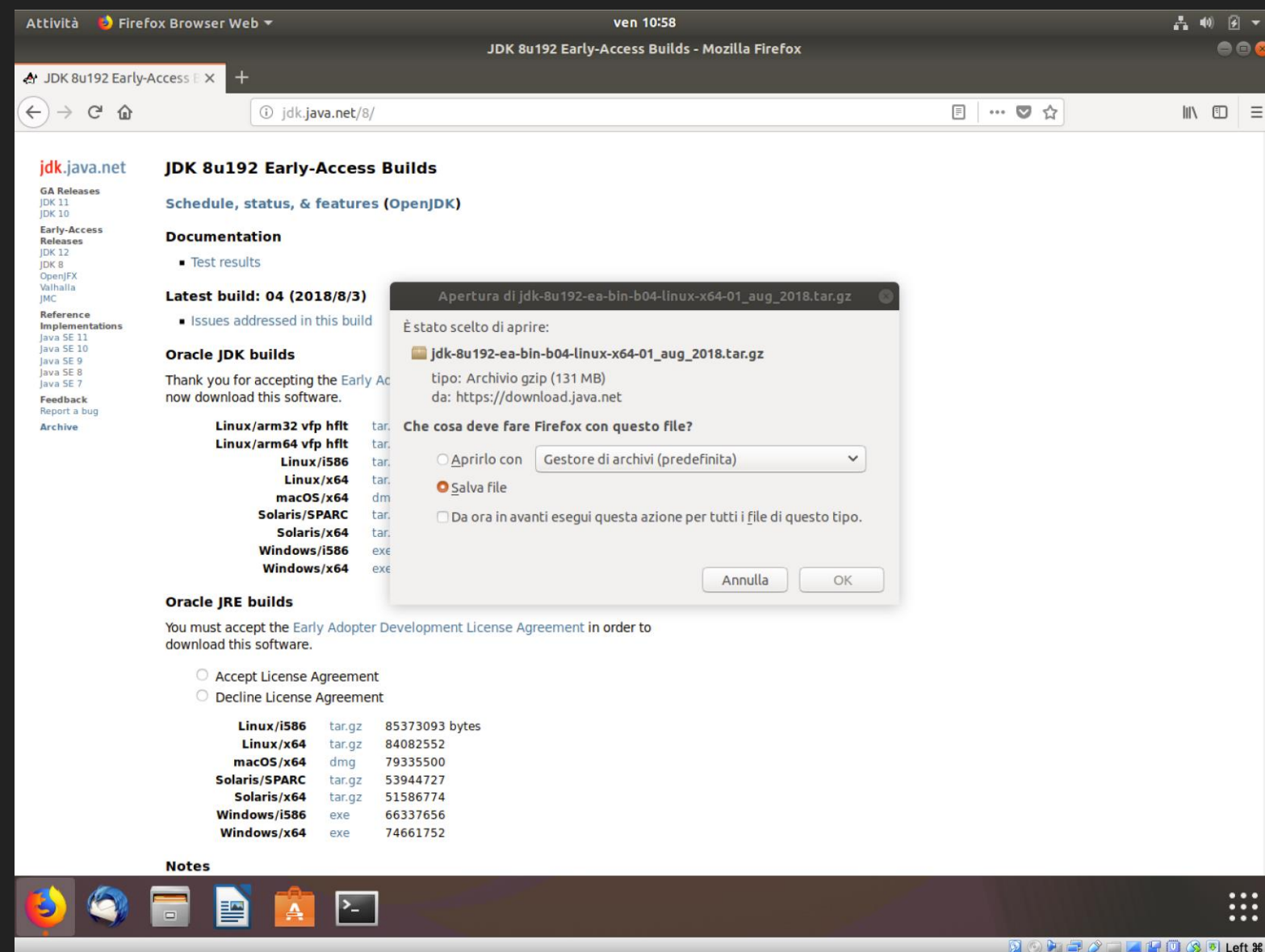
JAVA - INSTALLAZIONE

► Java - Quale sistema operativo?

► Linux

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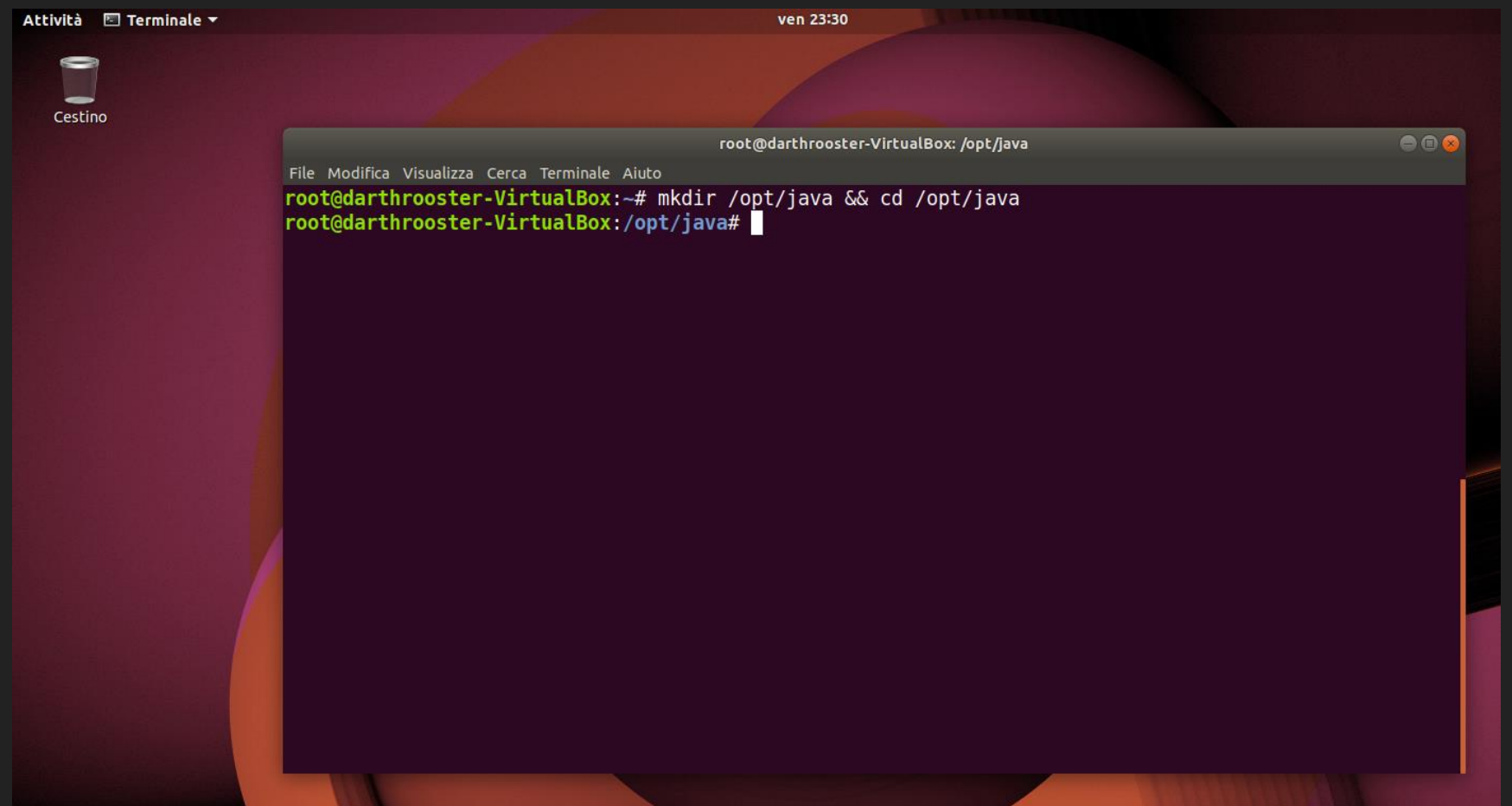
► Java - Quale sistema operativo?

► Linux

► Windows

► Mac

- Creiamo una cartella dove installare Java. Per un accesso globale (cioè per tutti gli utenti) è preferibile scegliere la seguente



The screenshot shows a Linux desktop with a purple and orange background. A terminal window is open, displaying the following commands and output:

```
root@darthrooster-VirtualBox: /opt/java
File Modifica Visualizza Cerca Terminale Aiuto
root@darthrooster-VirtualBox:~# mkdir /opt/java && cd /opt/java
root@darthrooster-VirtualBox:/opt/java#
```

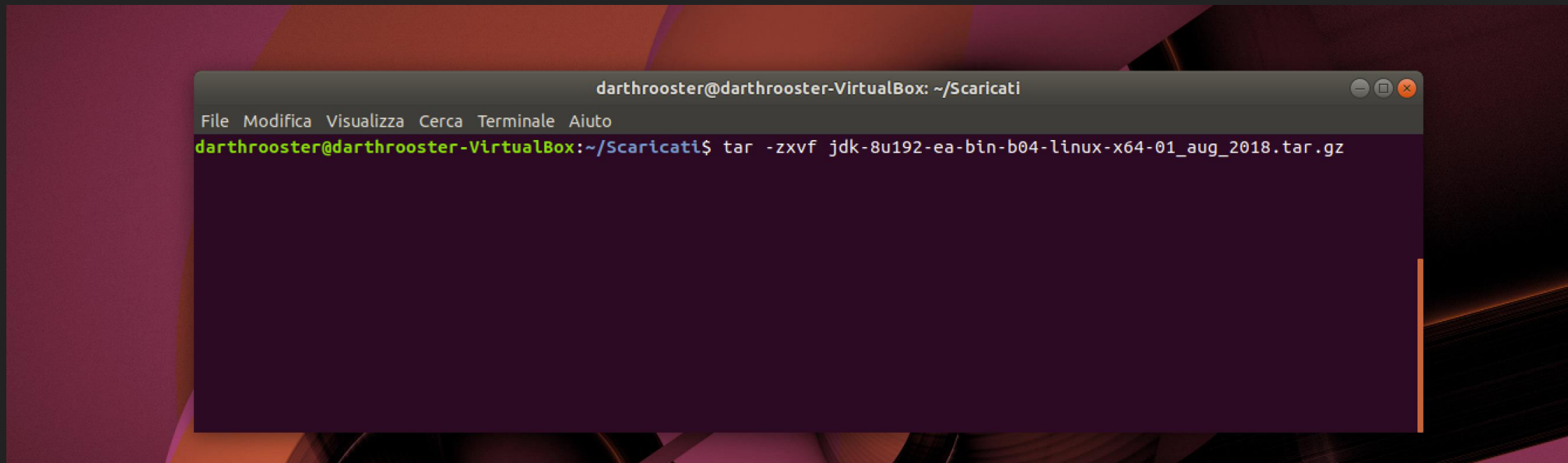

► Java - Quale sistema operativo?

► Linux

► Windows

- Estraiamo la cartella dal file tar usando il **tar command** come mostrato sotto:

► Mac

A screenshot of a terminal window titled "darthrooster@darthrooster-VirtualBox: ~/Scaricati". The window has a menu bar with "File", "Modifica", "Visualizza", "Cerca", "Terminale", and "Aiuto". The terminal shows the command "darthrooster@darthrooster-VirtualBox:~/Scaricati\$ tar -zxvf jdk-8u192-ea-bin-b04-linux-x64-01_aug_2018.tar.gz" being entered. The background of the slide features a dark, abstract image with orange and purple geometric shapes.

```
darthrooster@darthrooster-VirtualBox: ~/Scaricati
File Modifica Visualizza Cerca Terminale Aiuto
darthrooster@darthrooster-VirtualBox:~/Scaricati$ tar -zxvf jdk-8u192-ea-bin-b04-linux-x64-01_aug_2018.tar.gz
```

► Java - Quale sistema operativo?

► Linux

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► Mac

- Spostiamo la cartella estratta in /opt/java e diciamo al sistema dove java e i suoi eseguibili saranno installati

```
darthrooster@darthrooster-VirtualBox: ~/Scaricati
```

```
File Modifica Visualizza Cerca Terminale Aiuto
```

```
darthrooster@darthrooster-VirtualBox:~/Scaricati$ ls  
jdk1.8.0_192  jdk-8u192-ea-bin-b04-linux-x64-01_aug_2018.tar.gz  
darthrooster@darthrooster-VirtualBox:~/Scaricati$ mv jdk1.8.0_192/ /opt/java/
```

```
darthrooster@darthrooster-VirtualBox: /opt/java/jdk1.8.0_192
```

```
File Modifica Visualizza Cerca Terminale Aiuto
```

```
darthrooster@darthrooster-VirtualBox:/opt/java/jdk1.8.0_192$ sudo update-alternatives --install /usr/bin/java java /opt/java/jdk1.8.0_192/bin/java 100  
[sudo] password di darthrooster:  
update-alternatives: viene usato /opt/java/jdk1.8.0_192/bin/java per fornire /usr/bin/java (java) in modalità automatica  
darthrooster@darthrooster-VirtualBox:/opt/java/jdk1.8.0_192$
```

```
darthrooster@darthrooster-VirtualBox: /opt/java/jdk1.8.0_192
```

```
File Modifica Visualizza Cerca Terminale Aiuto
```

```
darthrooster@darthrooster-VirtualBox:/opt/java/jdk1.8.0_192$ sudo update-alternatives --install /usr/bin/javac javac /opt/java/jdk1.8.0_192/bin/javac 100  
update-alternatives: viene usato /opt/java/jdk1.8.0_192/bin/javac per fornire /usr/bin/javac (javac) in modalità automatica  
darthrooster@darthrooster-VirtualBox:/opt/java/jdk1.8.0_192$
```

```
darthrooster@darthrooster-VirtualBox: /opt/java/jdk1.8.0_192
```

```
File Modifica Visualizza Cerca Terminale Aiuto
```

```
darthrooster@darthrooster-VirtualBox:/opt/java/jdk1.8.0_192$ sudo update-alternatives --install /usr/bin/jar jar /opt/java/jdk1.8.0_192/bin/jar 100  
update-alternatives: viene usato /opt/java/jdk1.8.0_192/bin/jar per fornire /usr/bin/jar (jar) in modalità automatica  
darthrooster@darthrooster-VirtualBox:/opt/java/jdk1.8.0_192$
```

► Java - Quale sistema operativo?

► Linux

- A questo punto è necessario popolare le variabili di ambiente e verificare la corretta installazione:

► Windows

► Mac

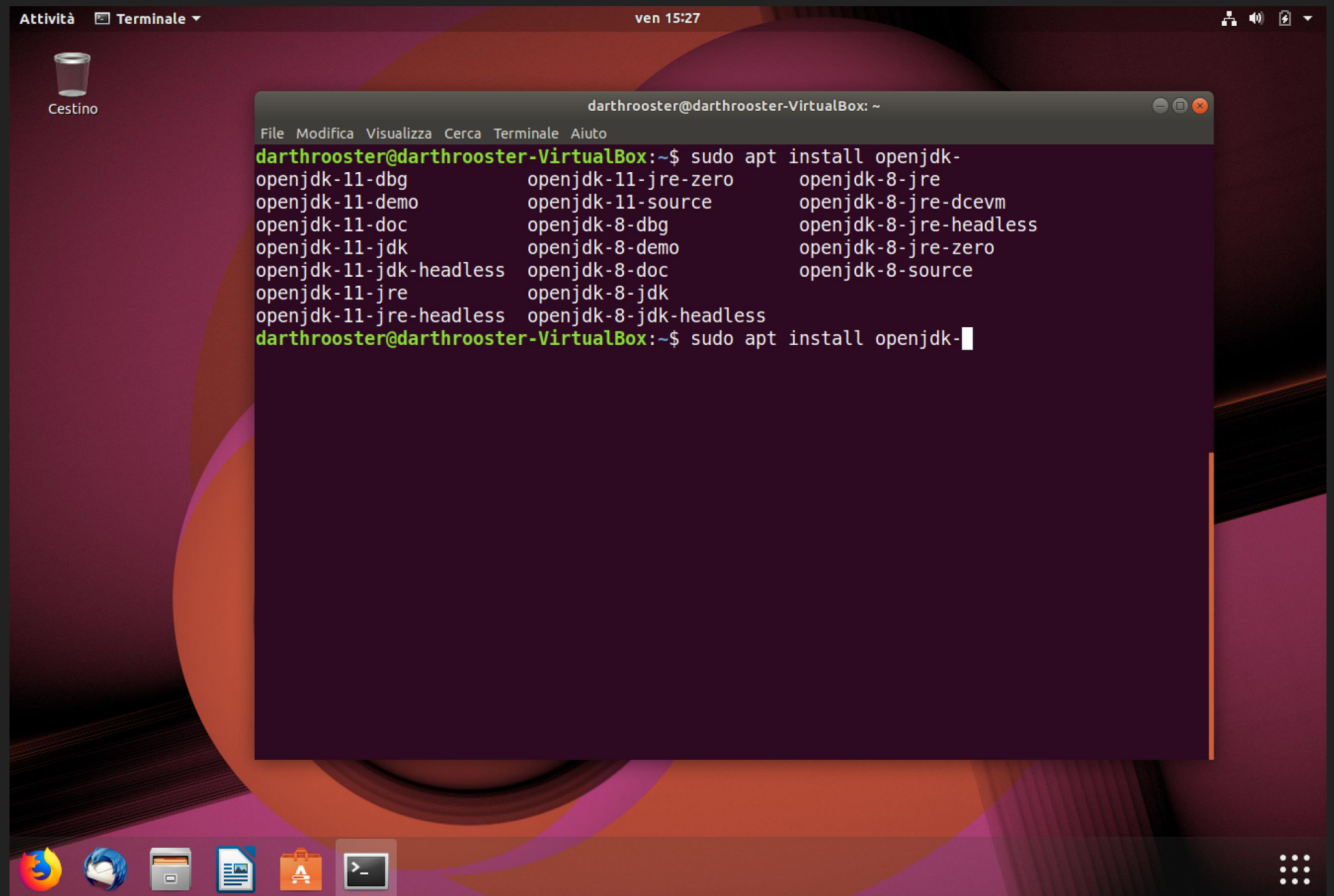
darthrooster@darthrooster-VirtualBox: /opt/java/jdk1.8.0_192

File Modifica Visualizza Cerca Terminale Aiuto

```
darthrooster@darthrooster-VirtualBox:/opt/java/jdk1.8.0_192$ export JAVA_HOME=/opt/java/jdk1.8.0_192/
darthrooster@darthrooster-VirtualBox:/opt/java/jdk1.8.0_192$ export PATH=$PATH:/opt/java/jdk1.8.0_192/bin
darthrooster@darthrooster-VirtualBox:/opt/java/jdk1.8.0_192$ java -version
java version "1.8.0_192-ea"
Java(TM) SE Runtime Environment (build 1.8.0_192-ea-b04)
Java HotSpot(TM) 64-Bit Server VM (build 25.192-b04, mixed mode)
darthrooster@darthrooster-VirtualBox:/opt/java/jdk1.8.0_192$
```

► Java - Quale sistema operativo?

- Linux
- Windows
- Mac

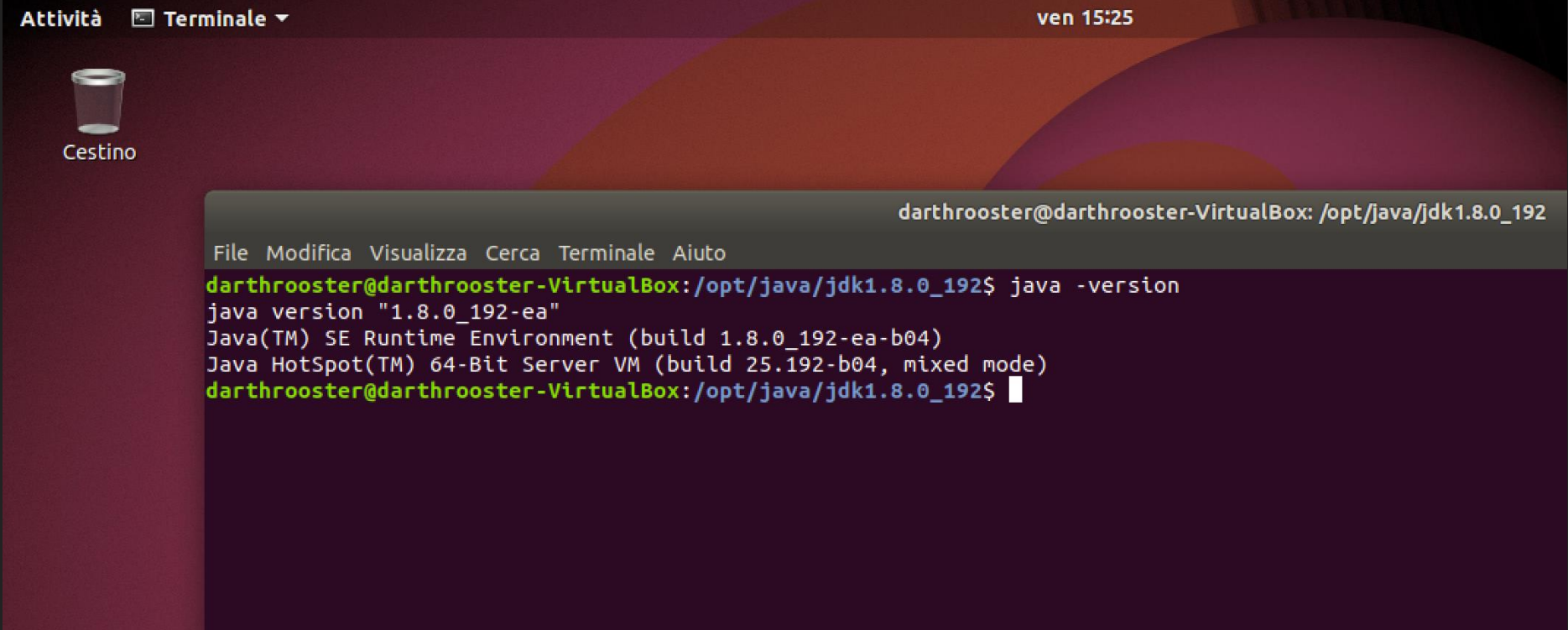


► Java - Quale sistema operativo?

► Linux

► Windows

► Mac

A screenshot of a Linux desktop environment. The desktop background is a dark red/maroon color with a large, abstract, lighter red circular shape. In the top-left corner, there is a trash can icon labeled 'Cestino'. The top bar shows 'Attività' and 'Terminale' with a dropdown arrow. The top-right corner shows the time 'ven 15:25'. A terminal window is open in the foreground, displaying the command 'java -version' and its output. The terminal title bar reads 'darthrooster@darthrooster-VirtualBox: /opt/java/jdk1.8.0_192'. The terminal content shows the command being executed and the resulting version information for Java 1.8.0_192-ea.

```
darthrooster@darthrooster-VirtualBox: /opt/java/jdk1.8.0_192
File Modifica Visualizza Cerca Terminale Aiuto
darthrooster@darthrooster-VirtualBox:/opt/java/jdk1.8.0_192$ java -version
java version "1.8.0_192-ea"
Java(TM) SE Runtime Environment (build 1.8.0_192-ea-b04)
Java HotSpot(TM) 64-Bit Server VM (build 25.192-b04, mixed mode)
darthrooster@darthrooster-VirtualBox:/opt/java/jdk1.8.0_192$
```

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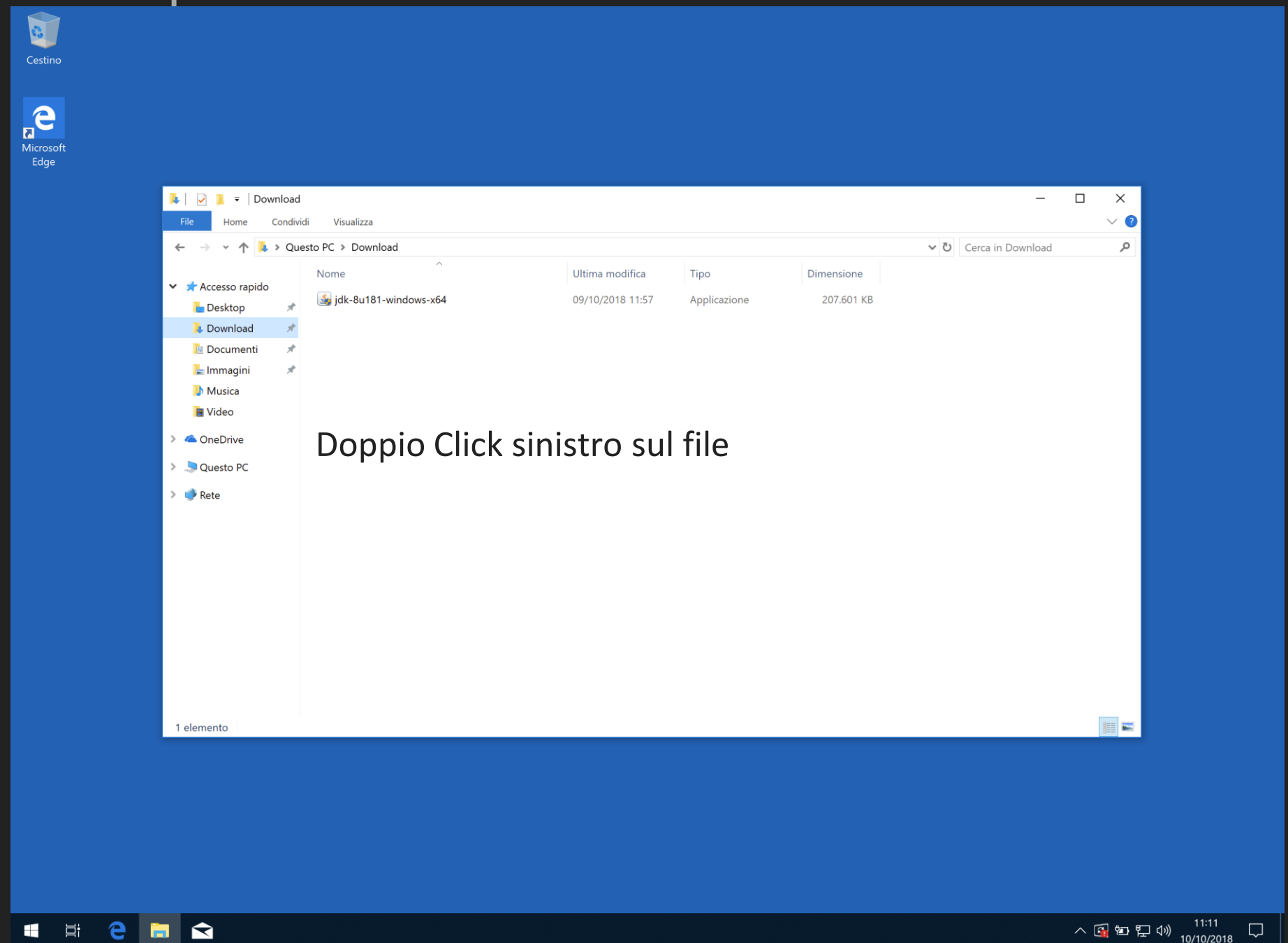
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► Java - Quale sistema operativo?

► Linux

► **Windows**

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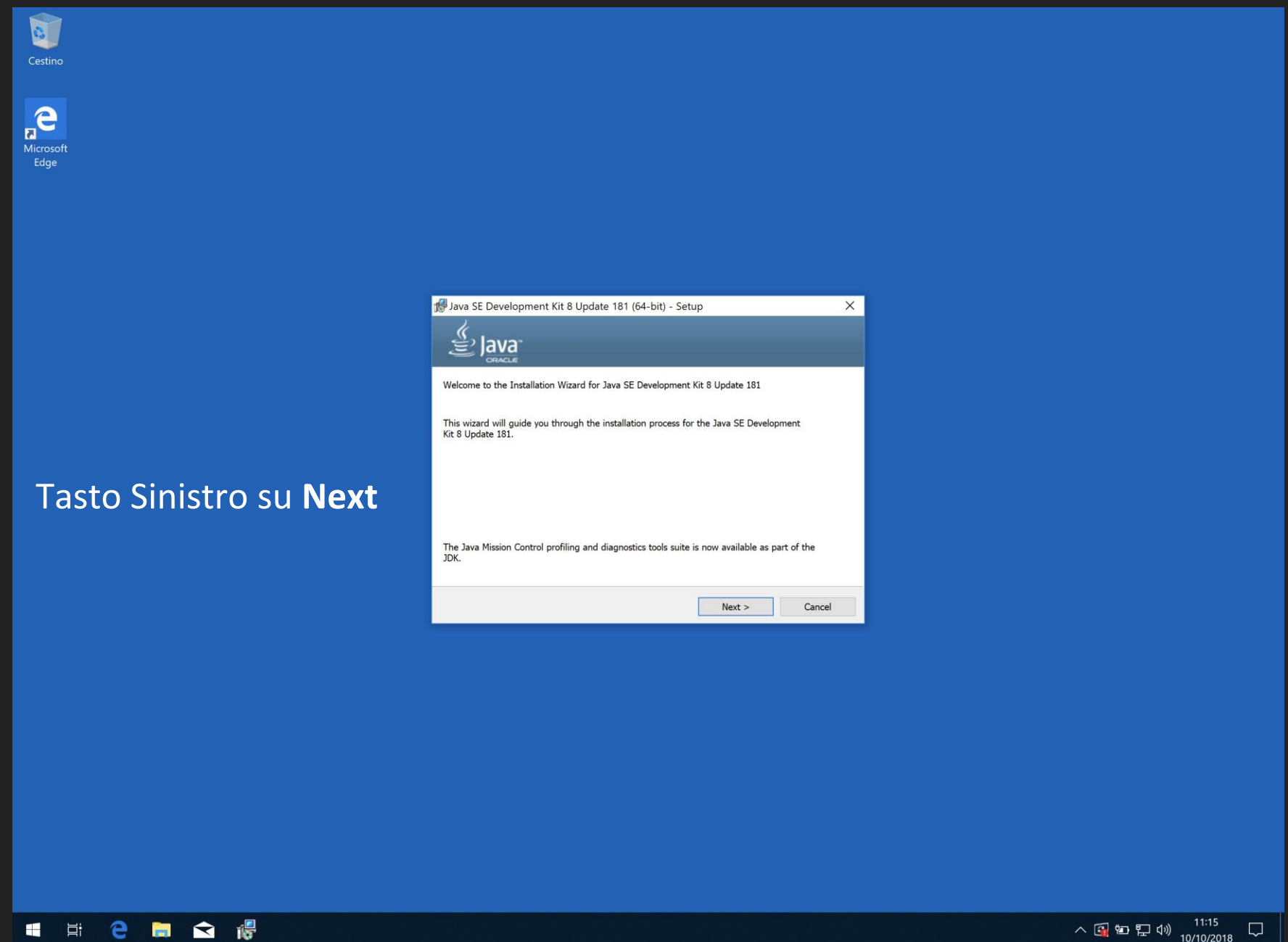
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- **Windows**
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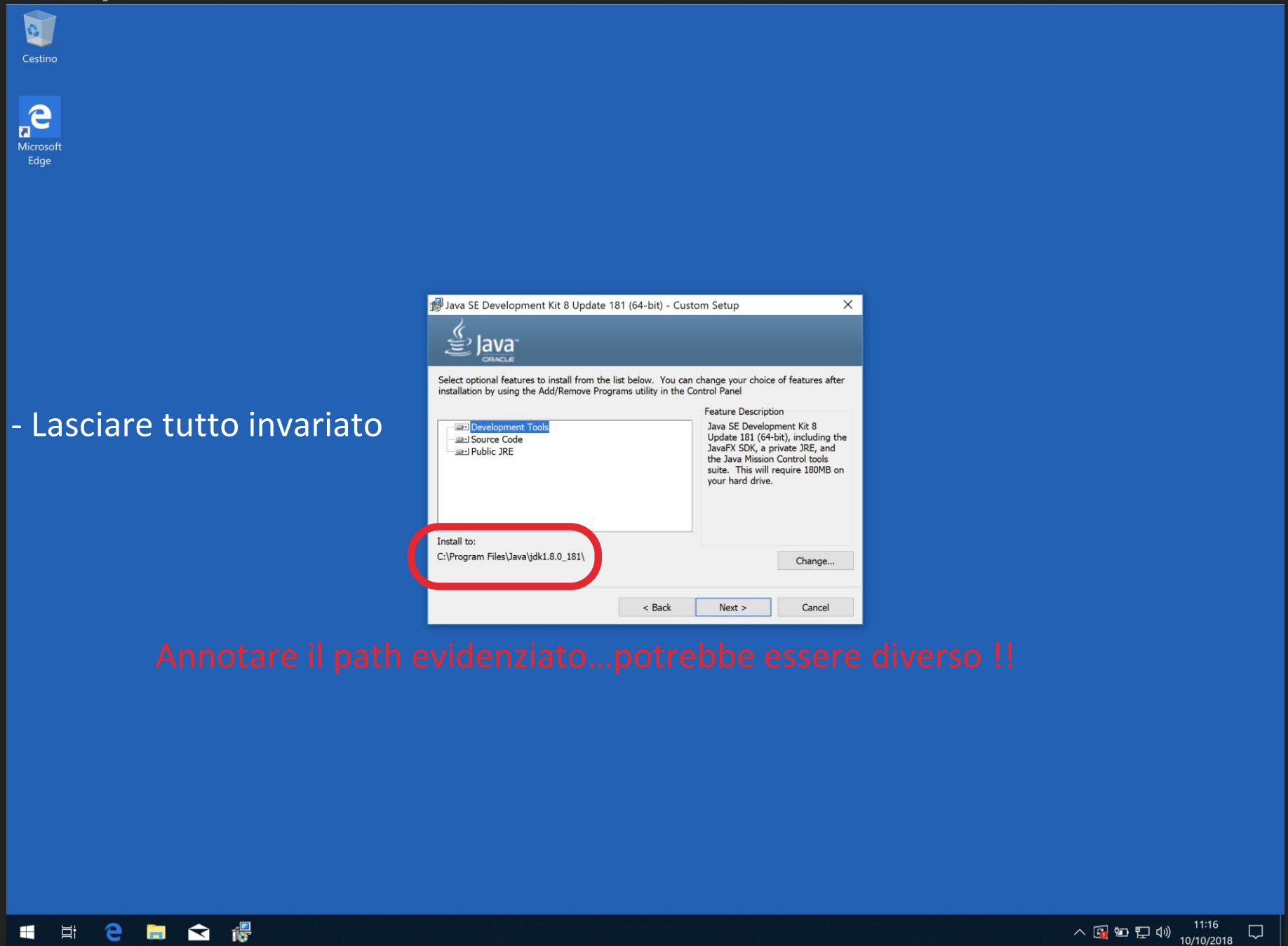


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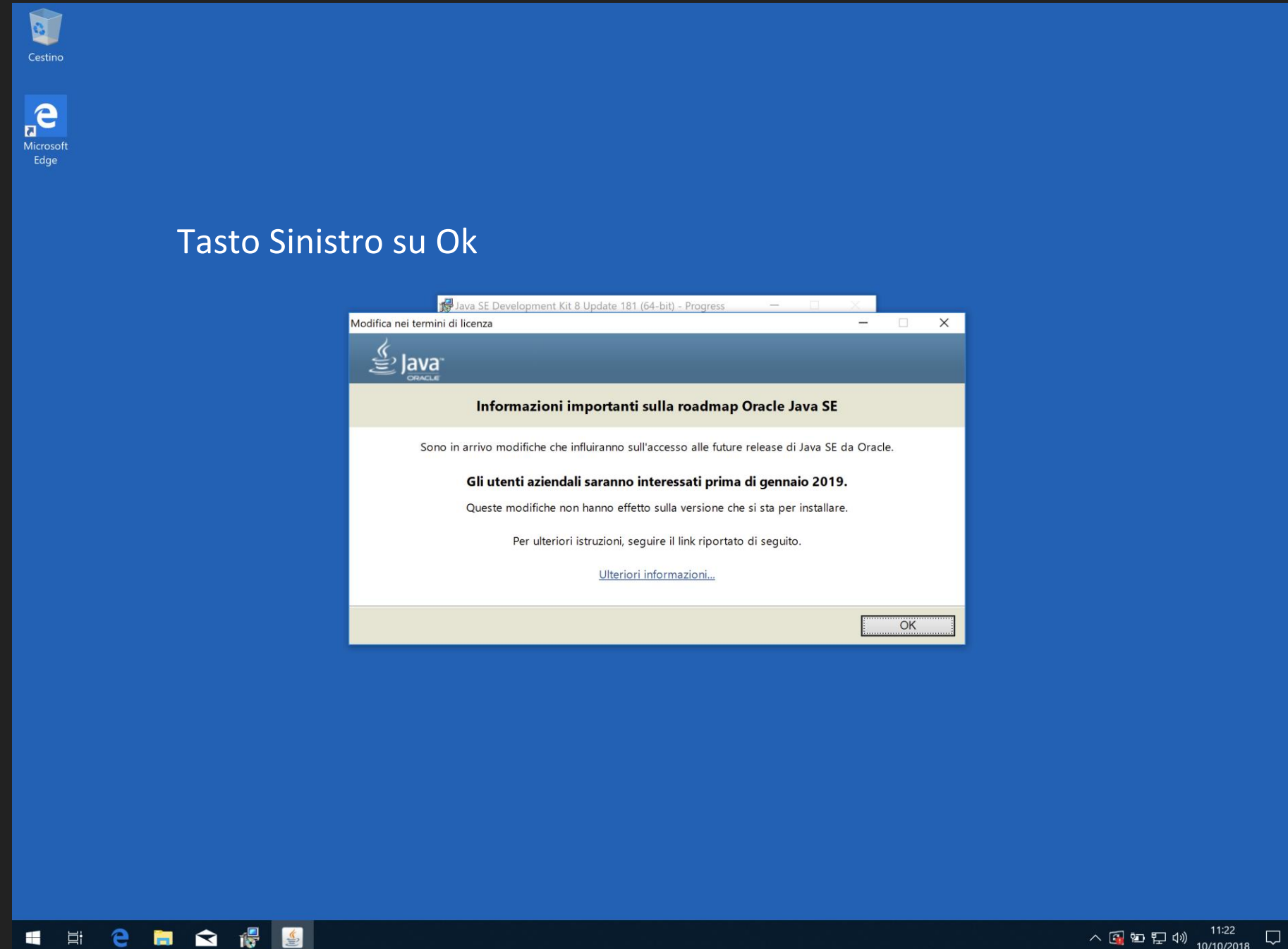


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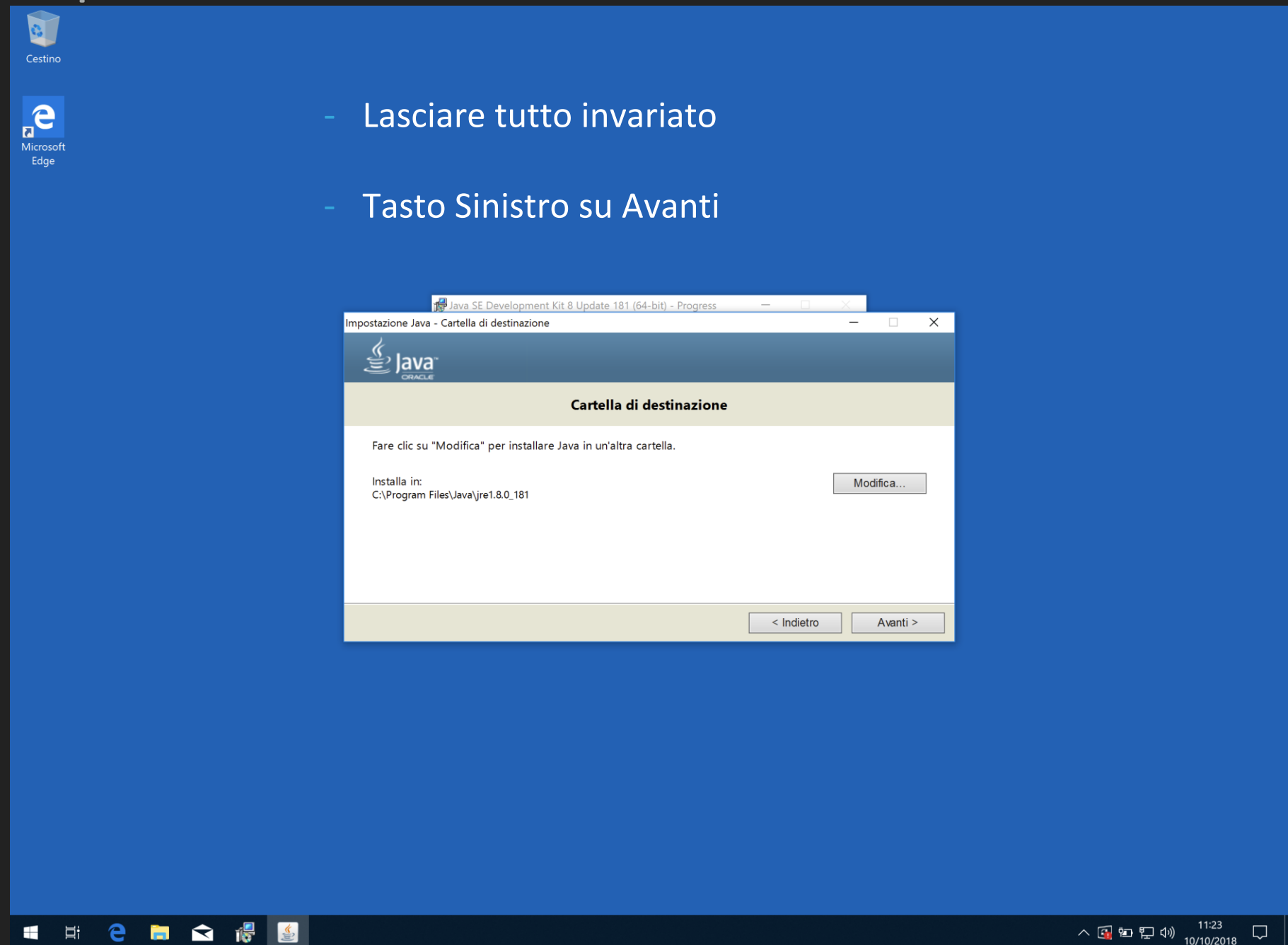
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► **Windows**

► Mac

- Lasciare tutto invariato

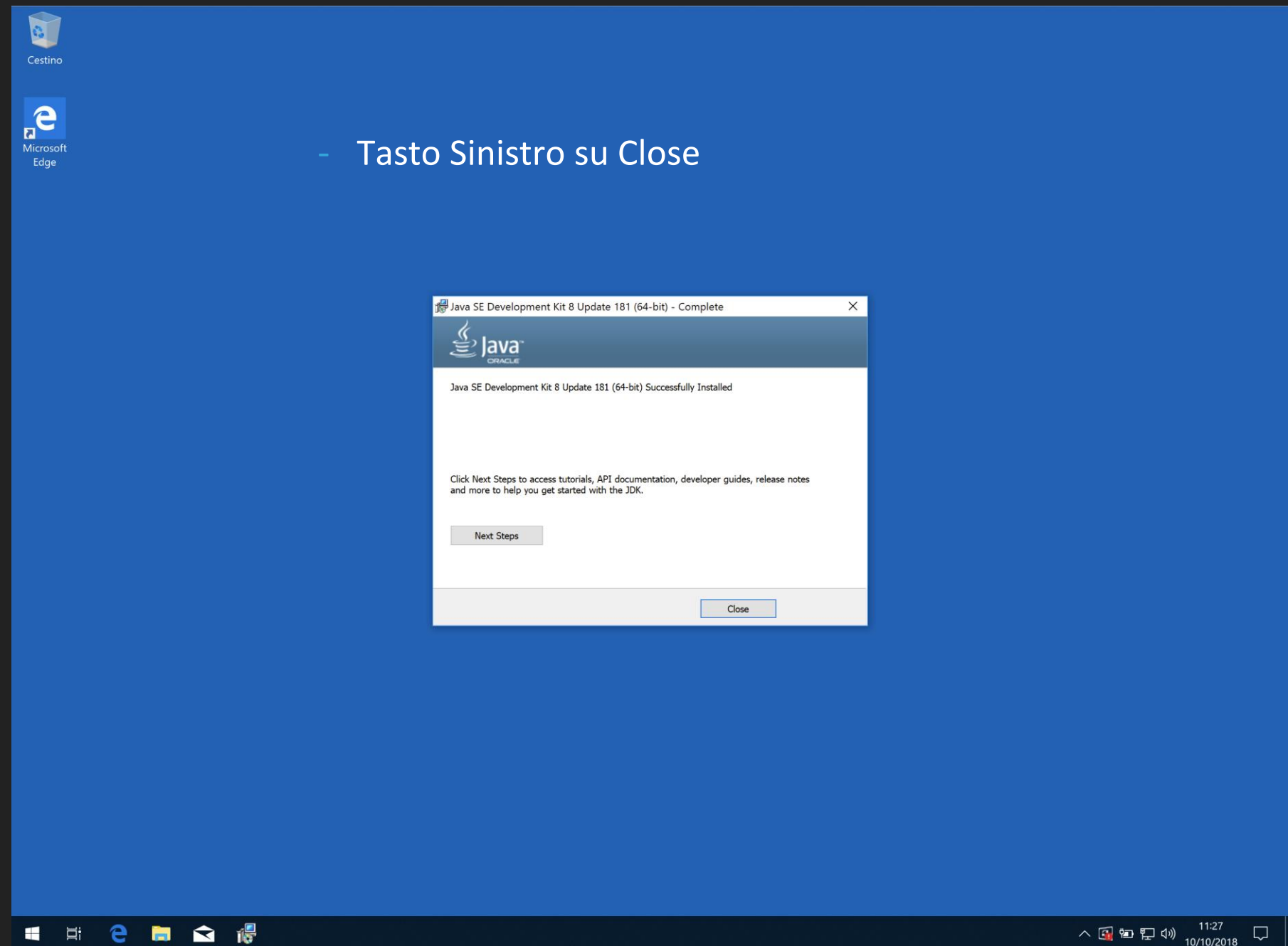
- Tasto Sinistro su Avanti



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- Tasto Sinistro su Close



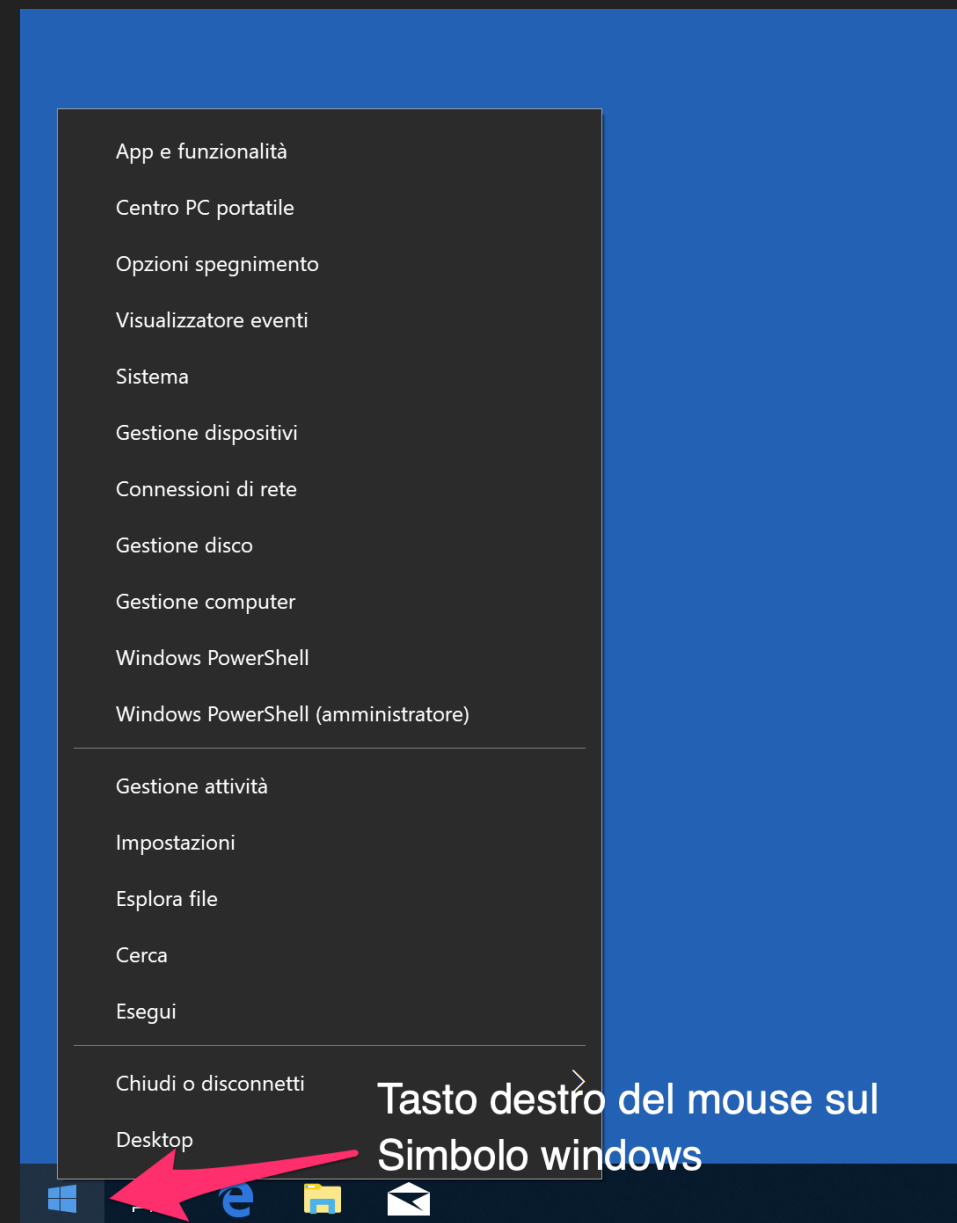
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- Come aprire il terminale (o bash o linea di comando) di windows



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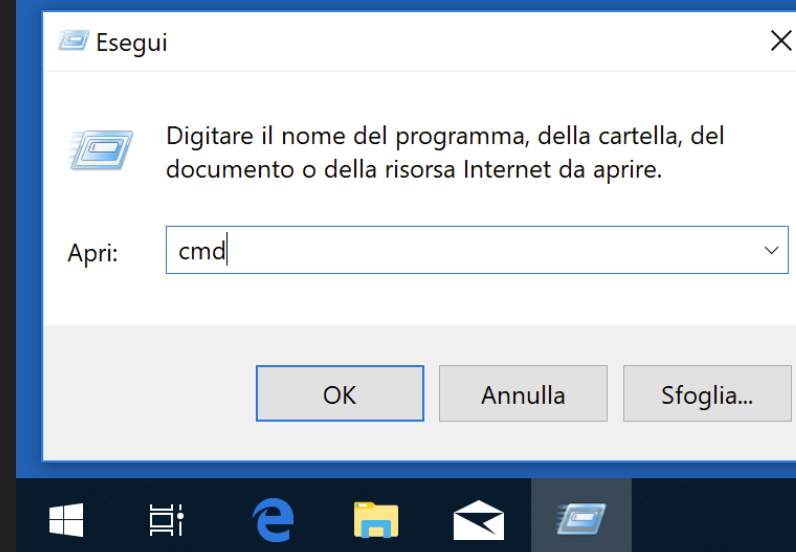
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- Come aprire il terminale (o bash o linea di comando) di windows

- Digitare cmd
- Tasto sinistro su Ok



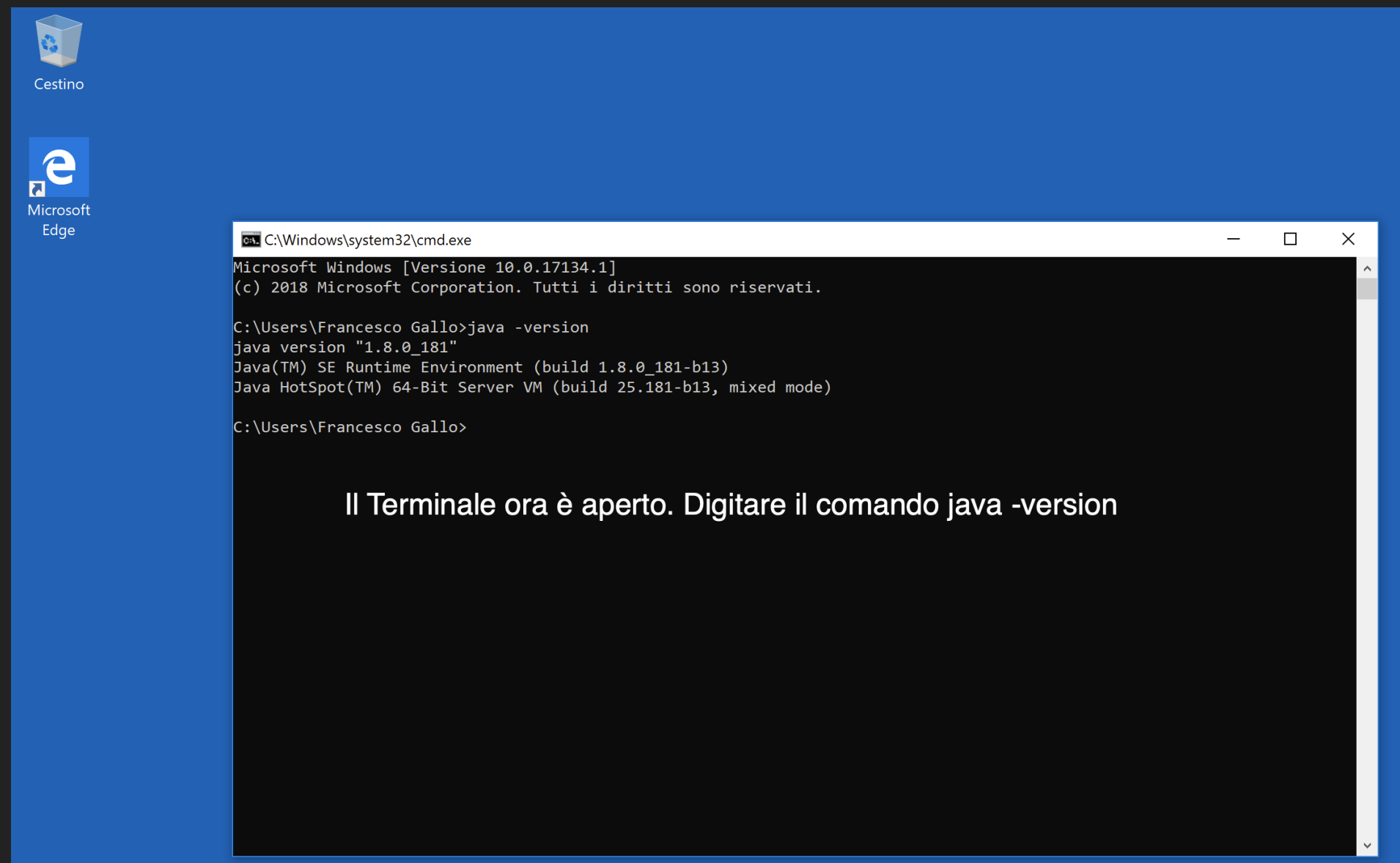
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- Come aprire il terminale (o bash o linea di comando) di windows



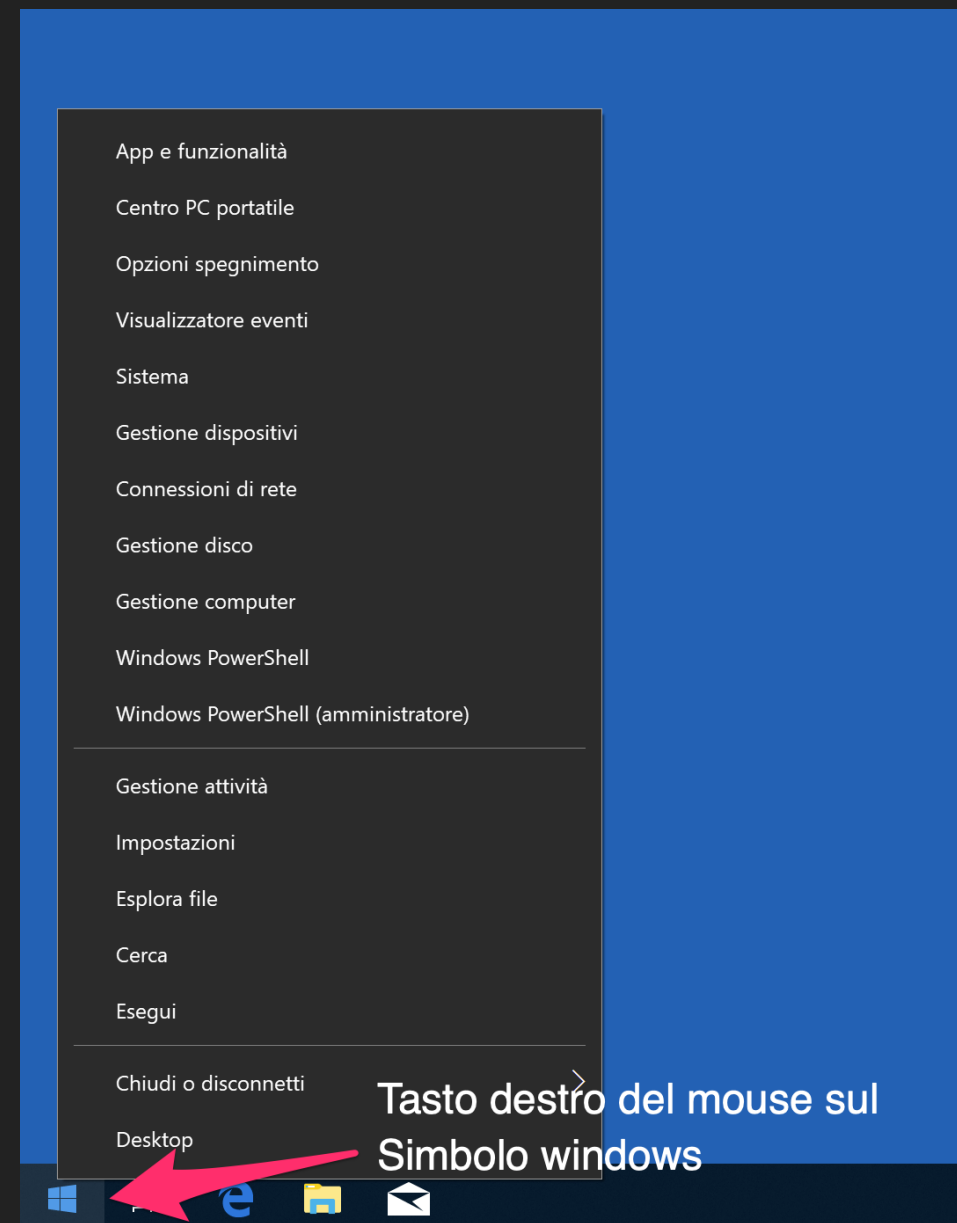
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- Aggiornare variabili d'ambiente

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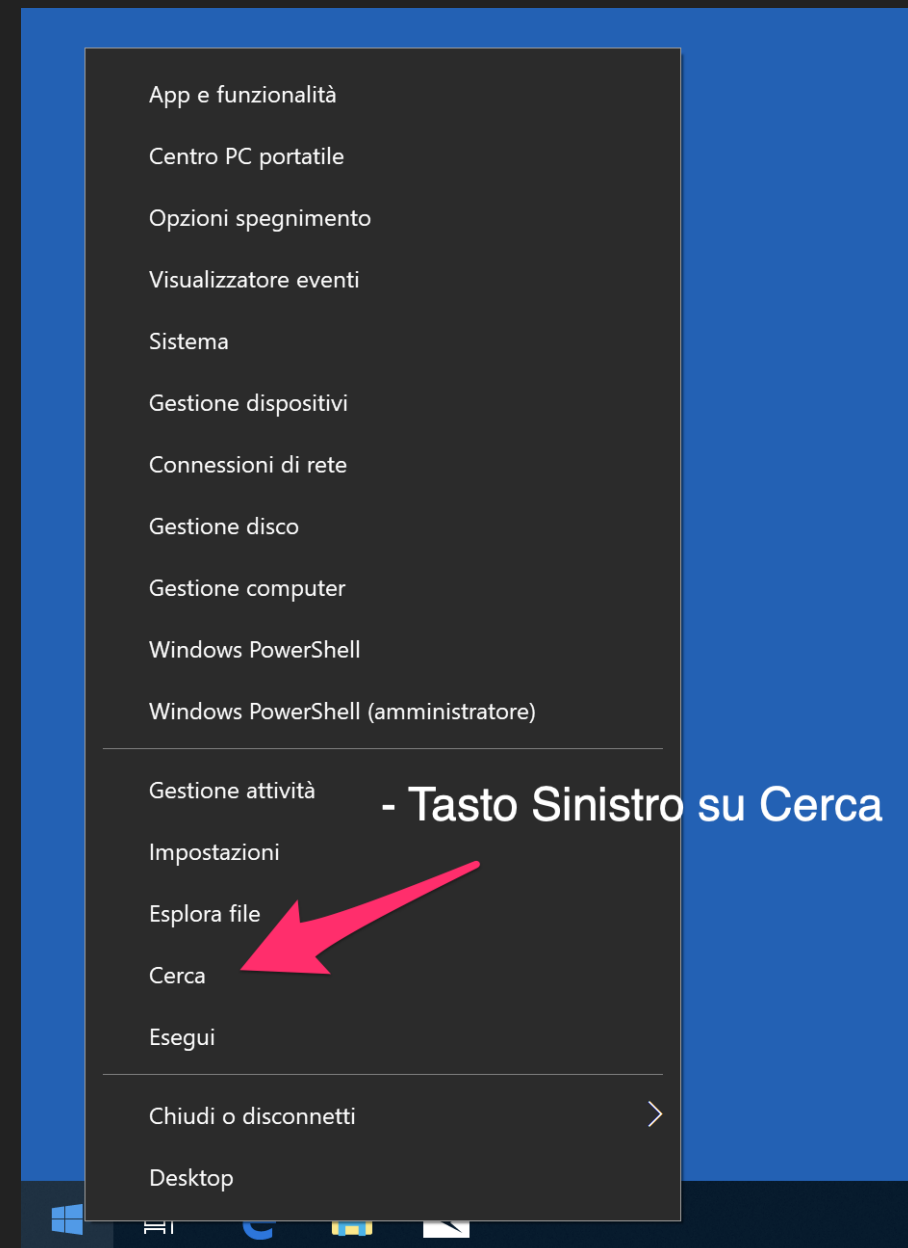
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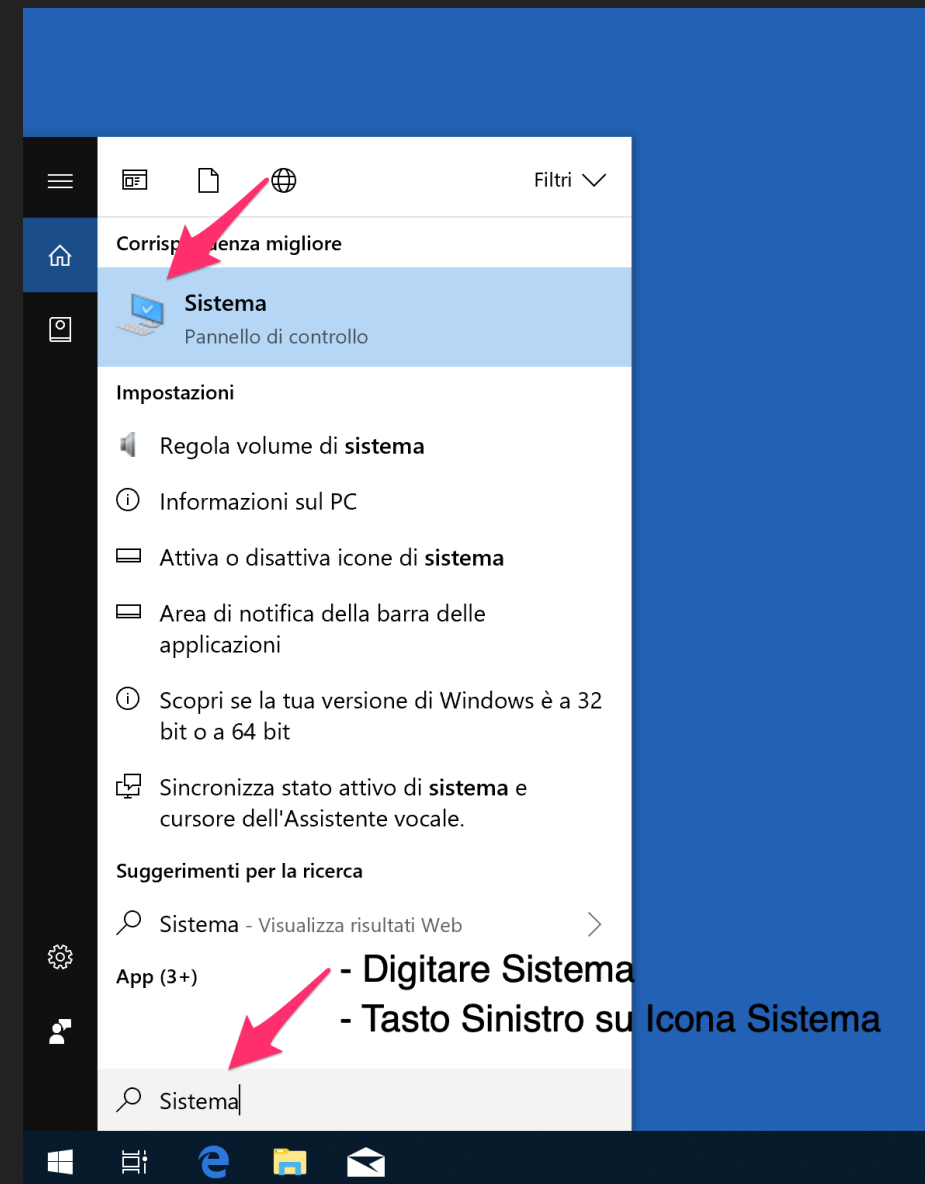
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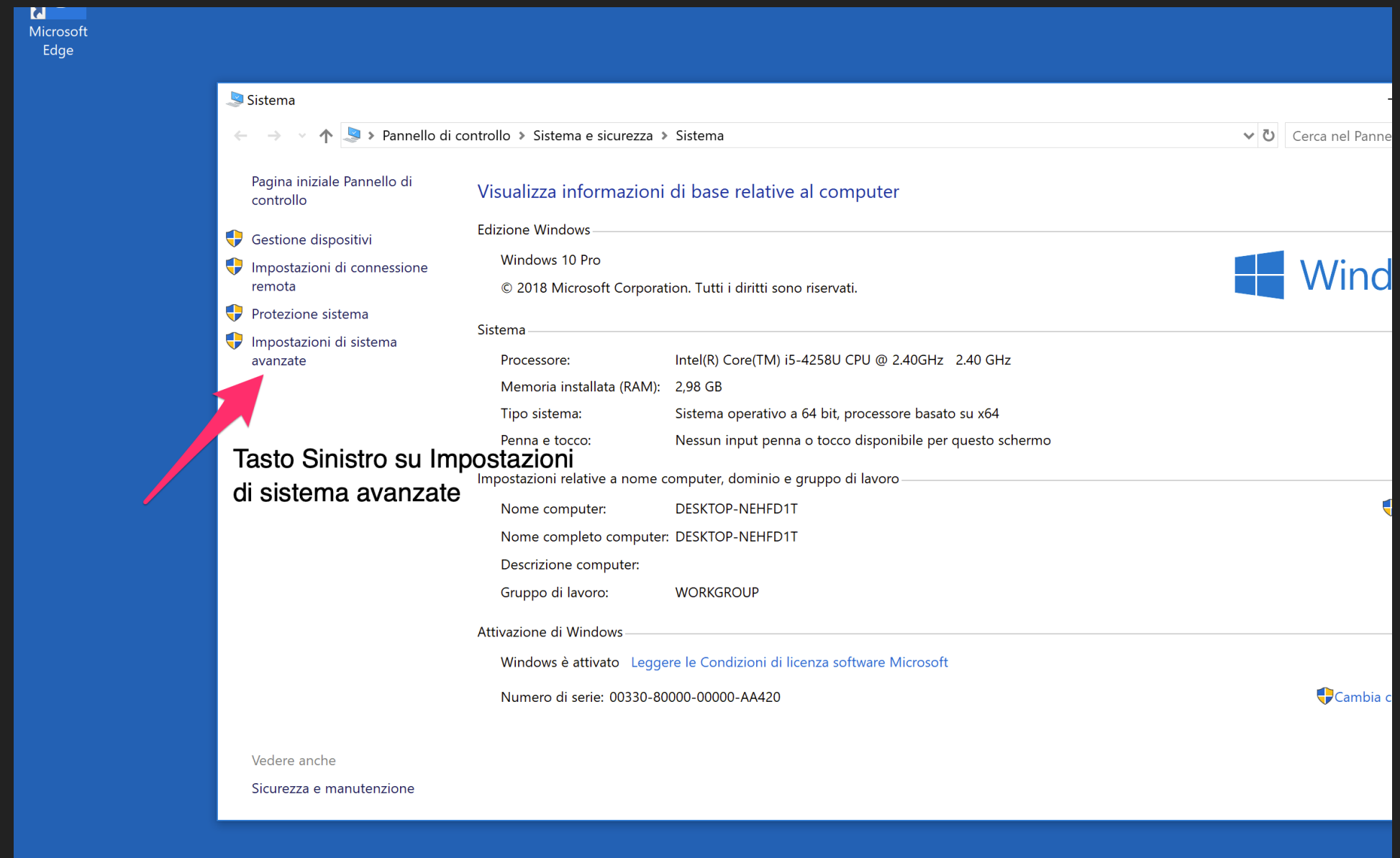
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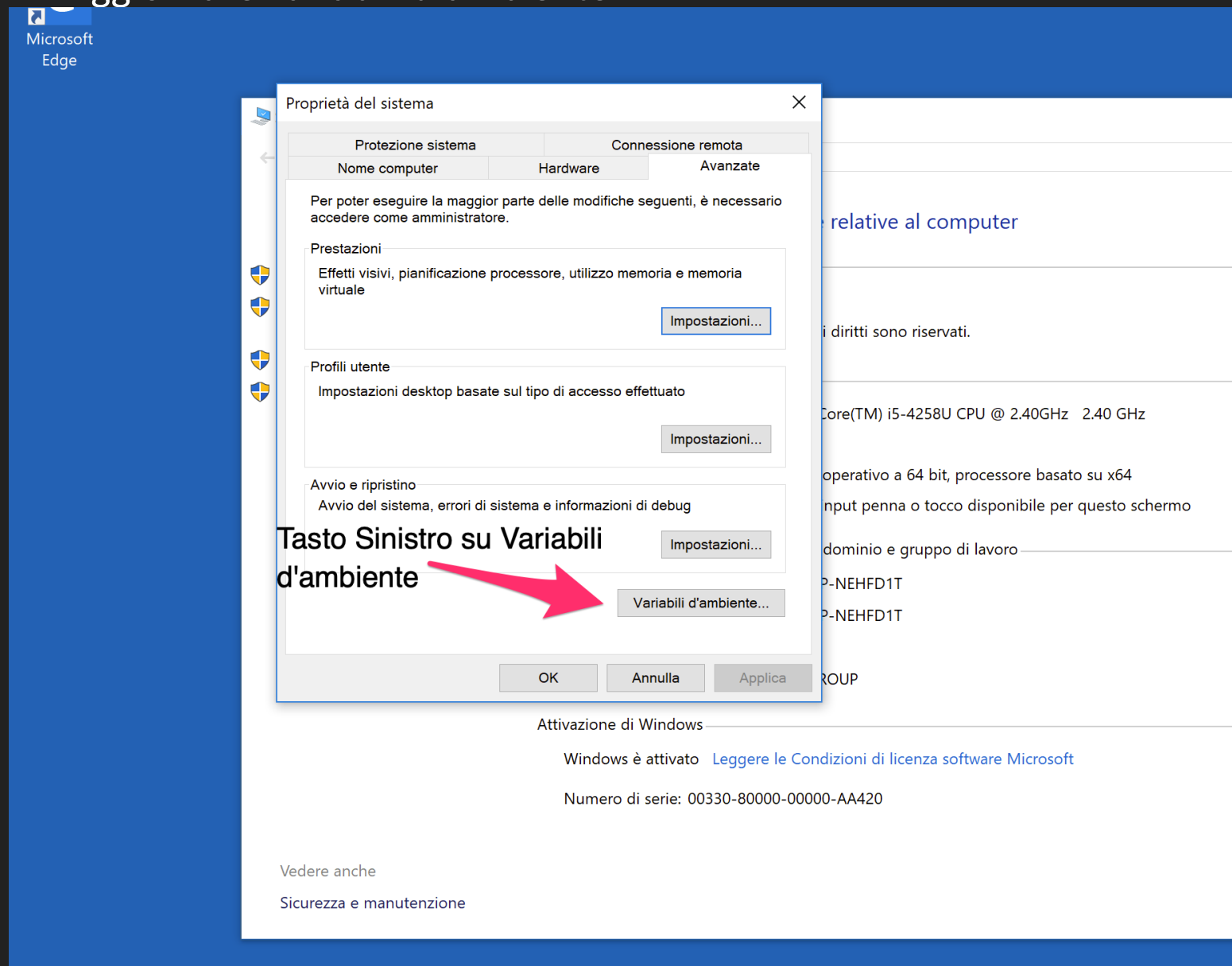
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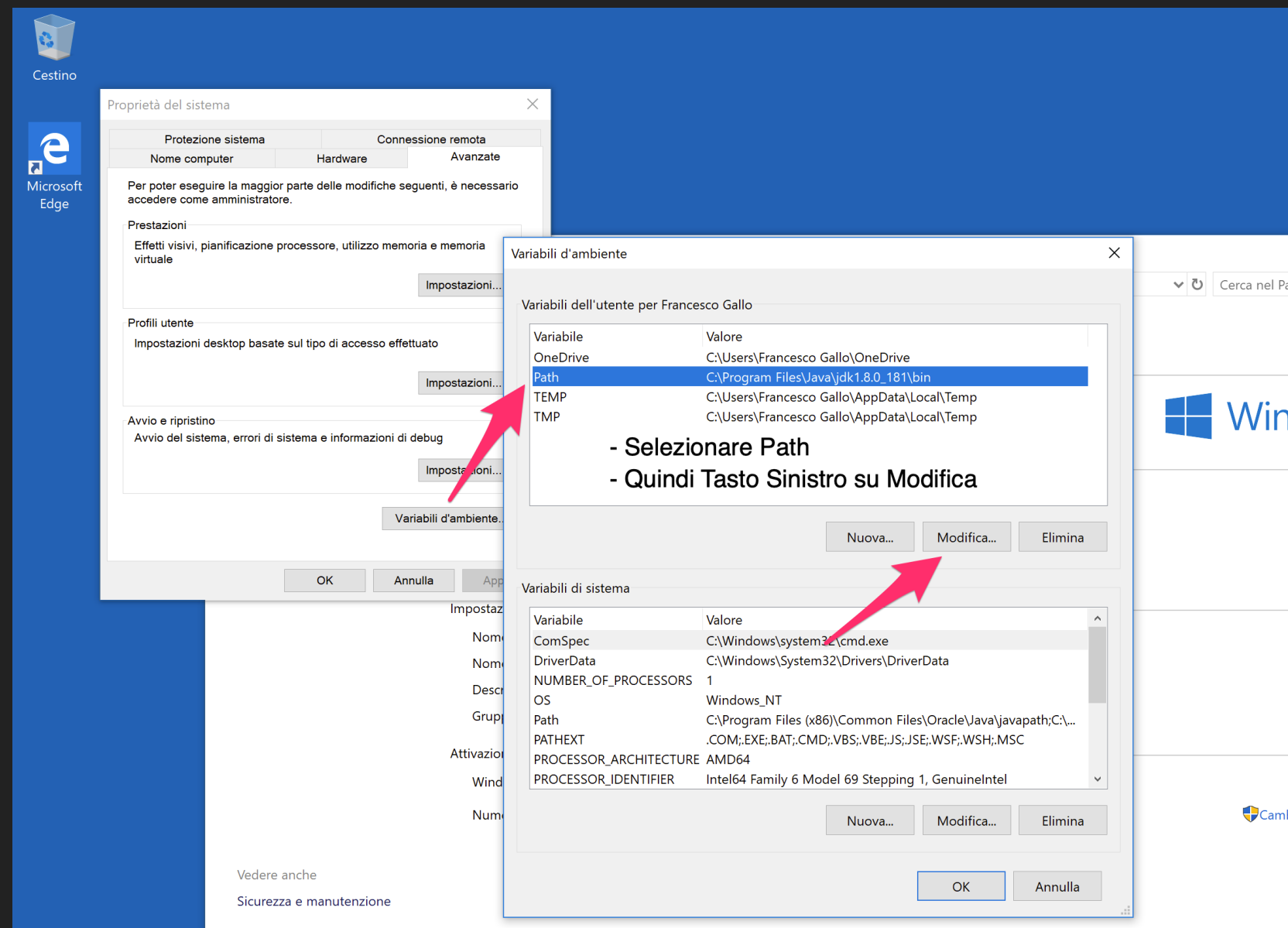
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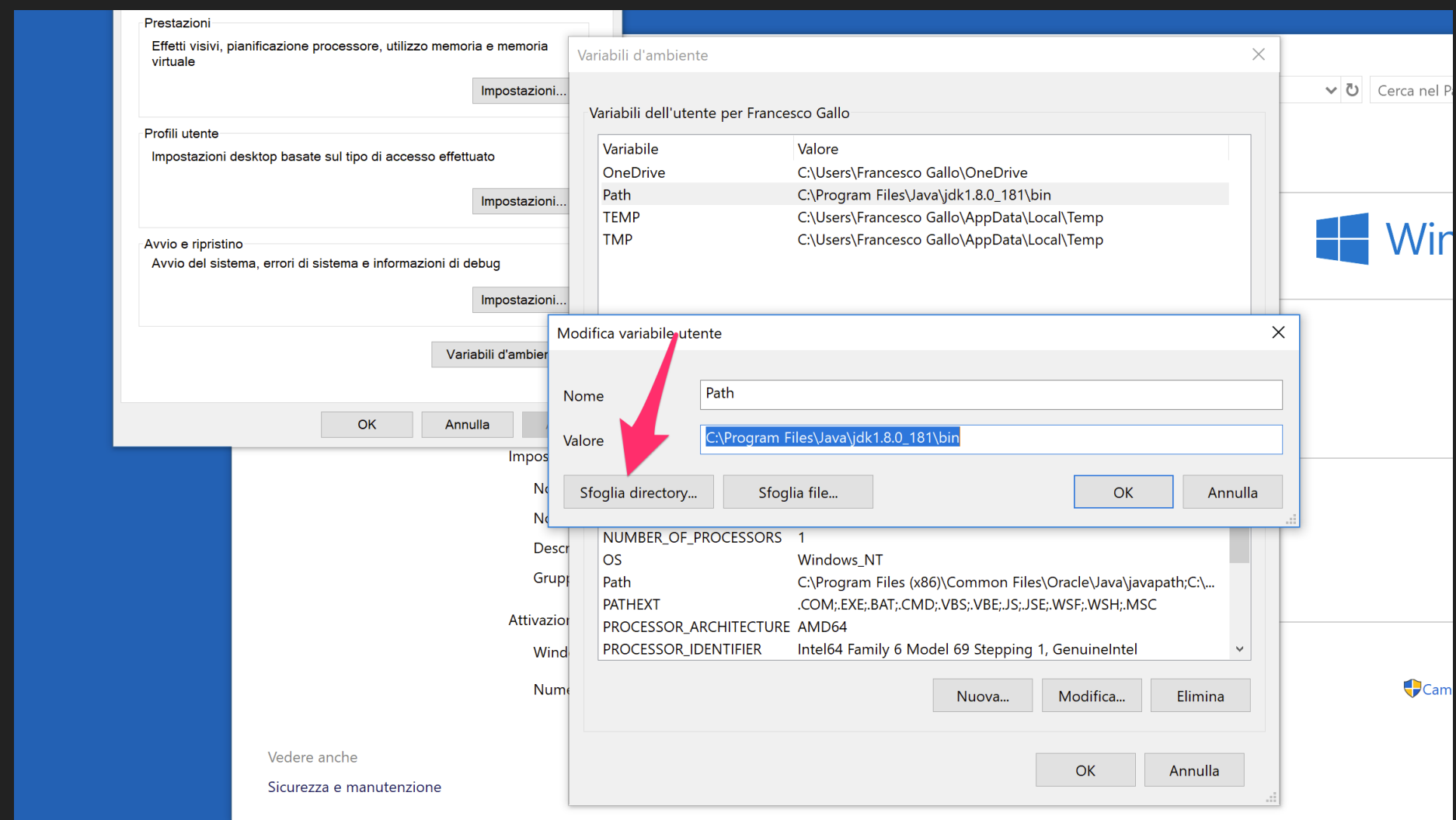
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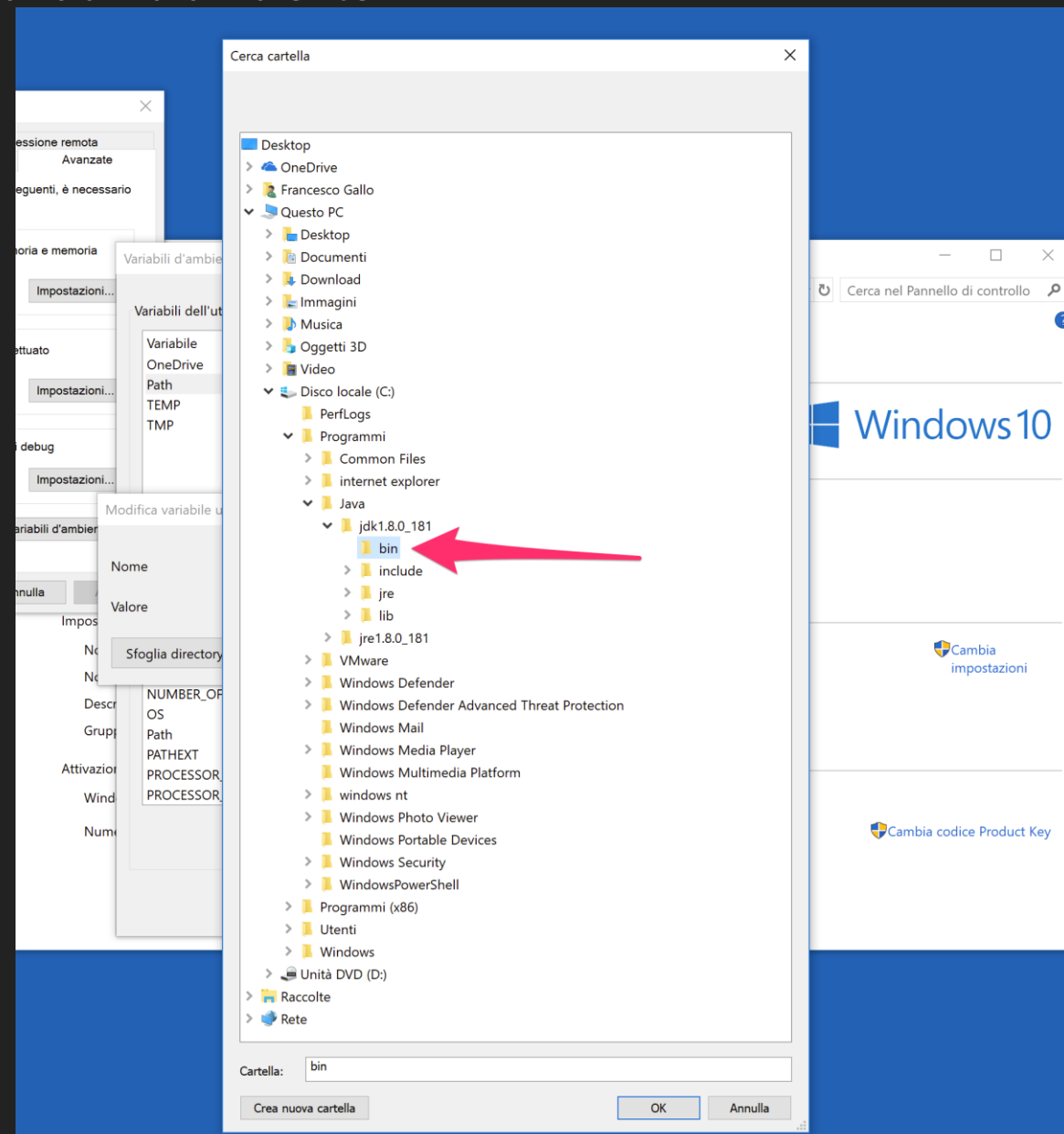
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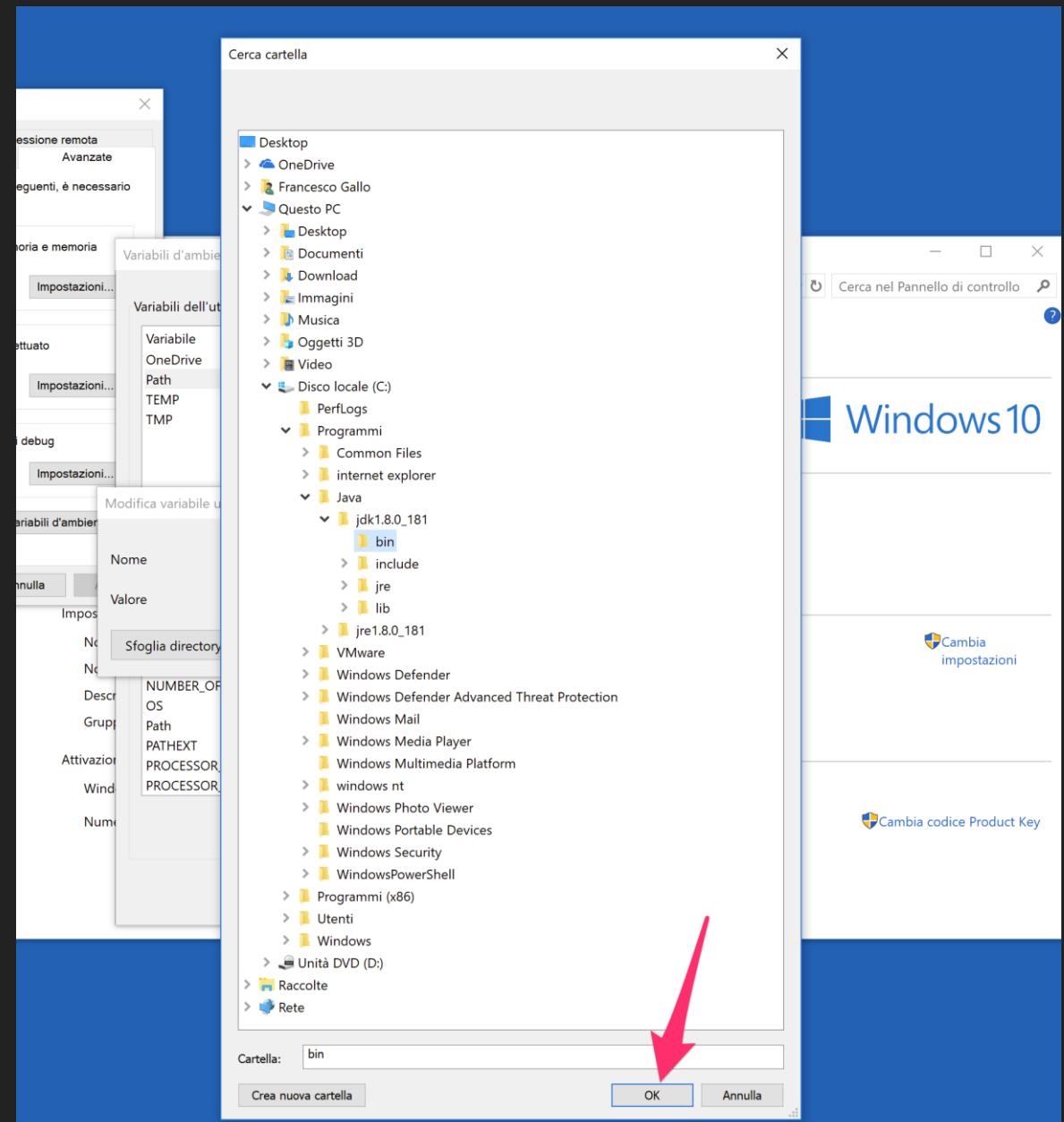
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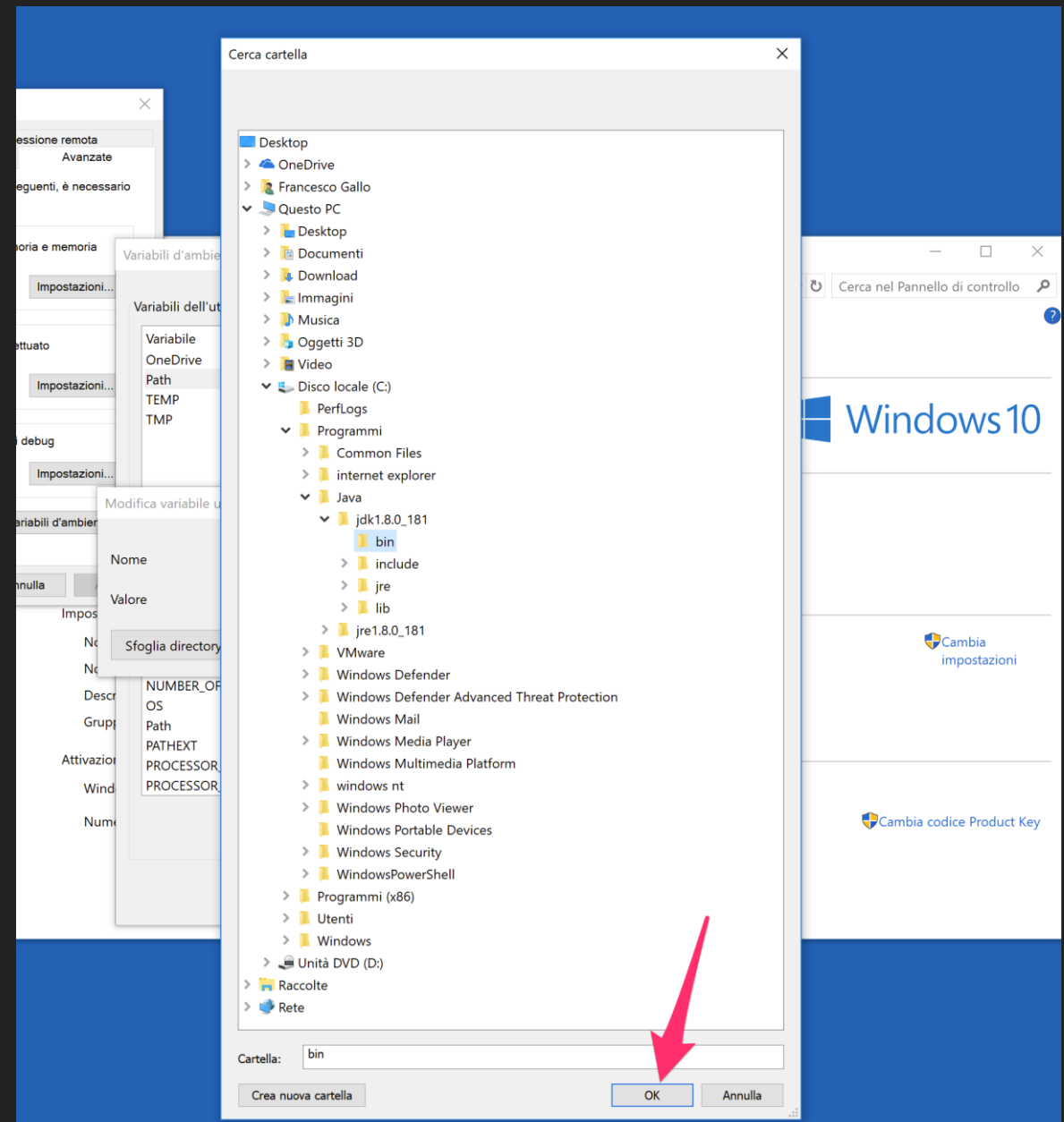
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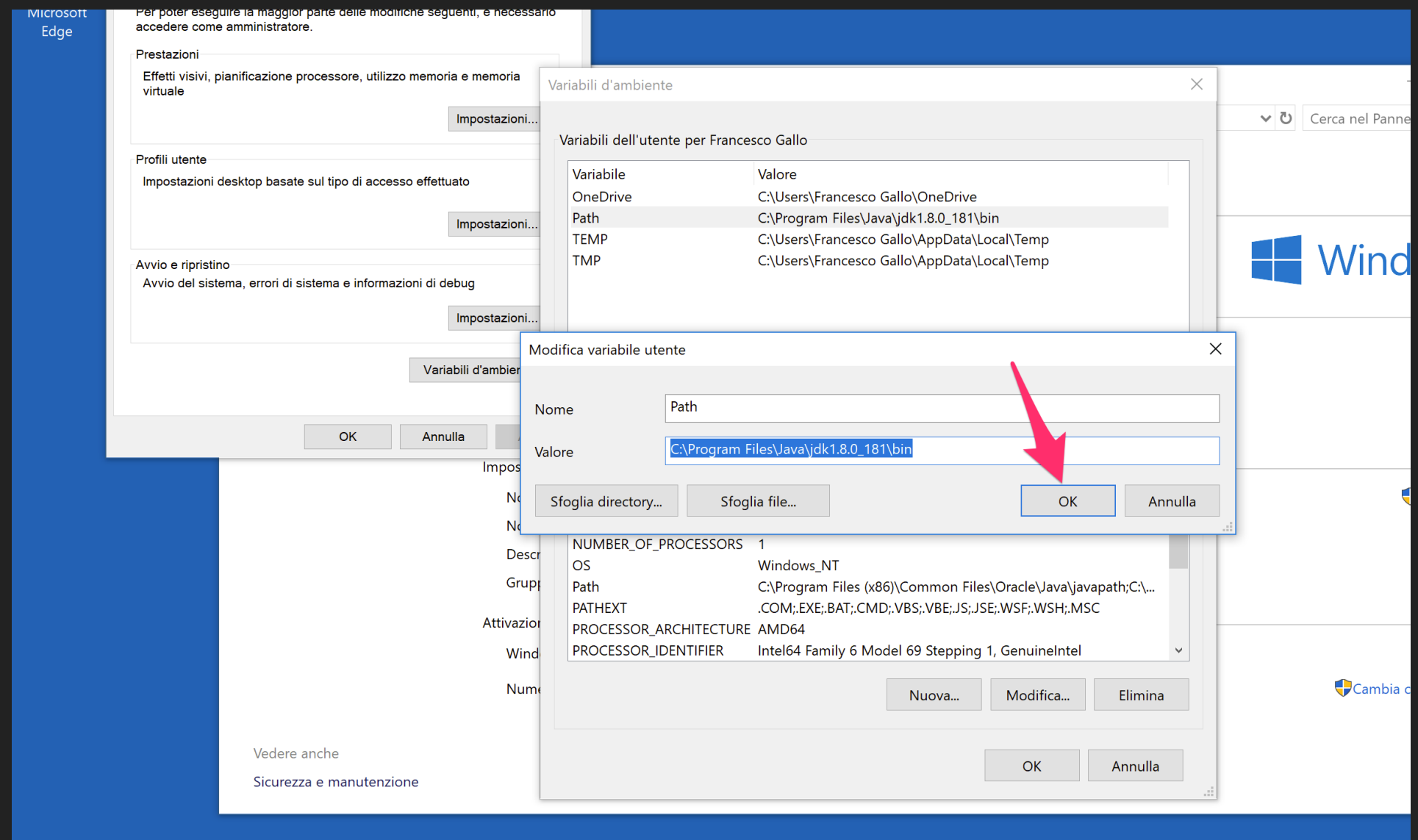
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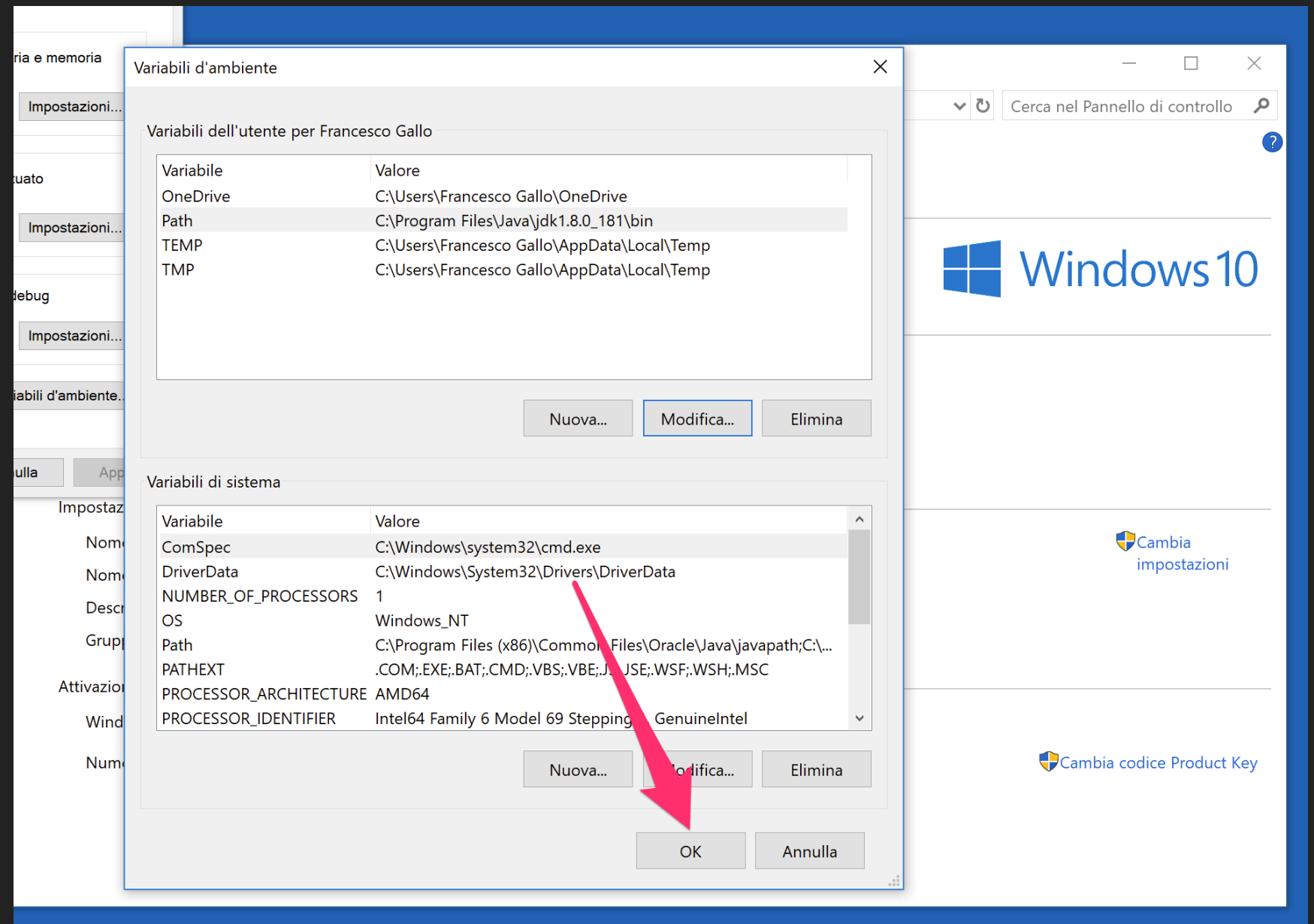
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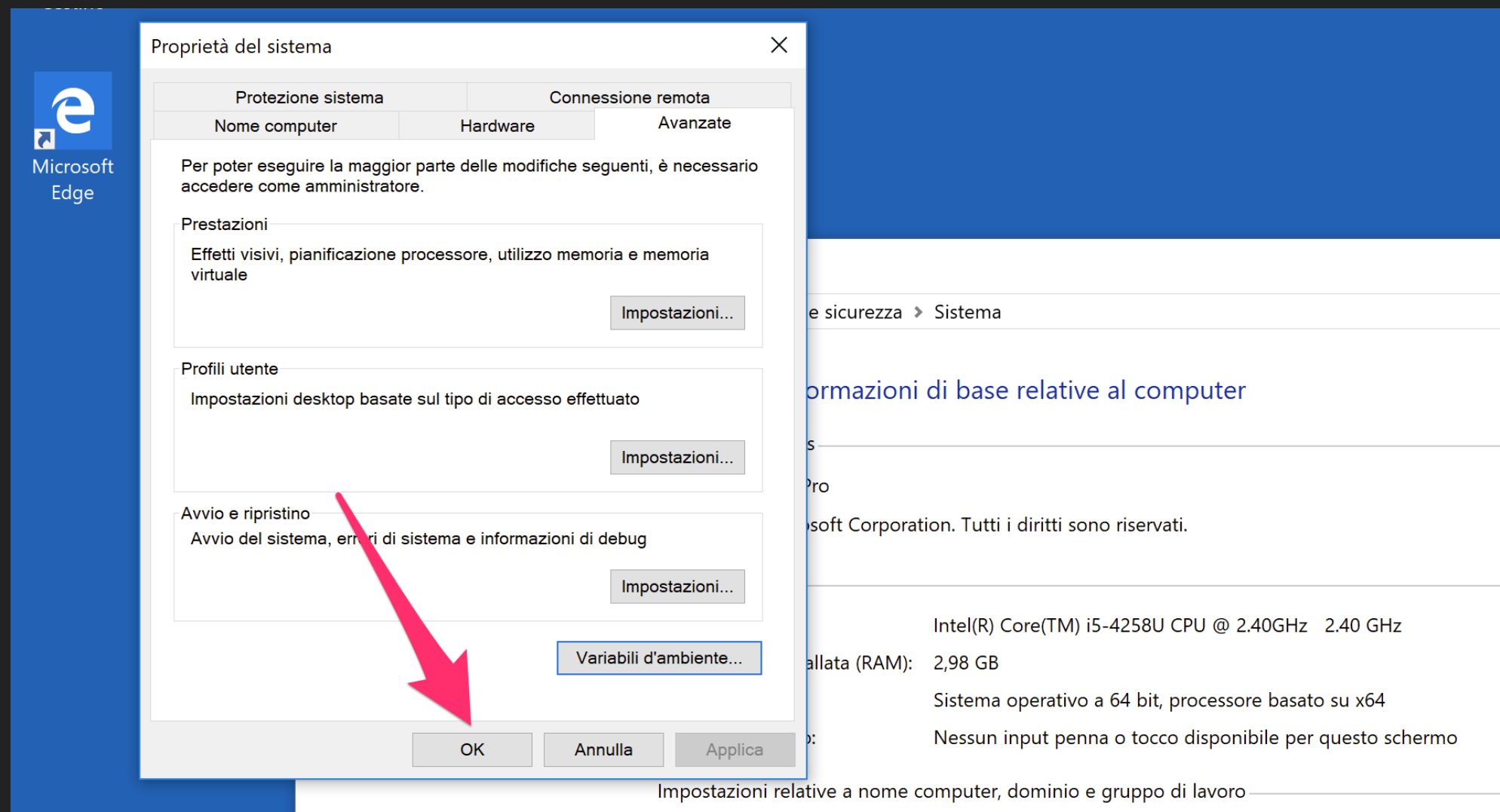
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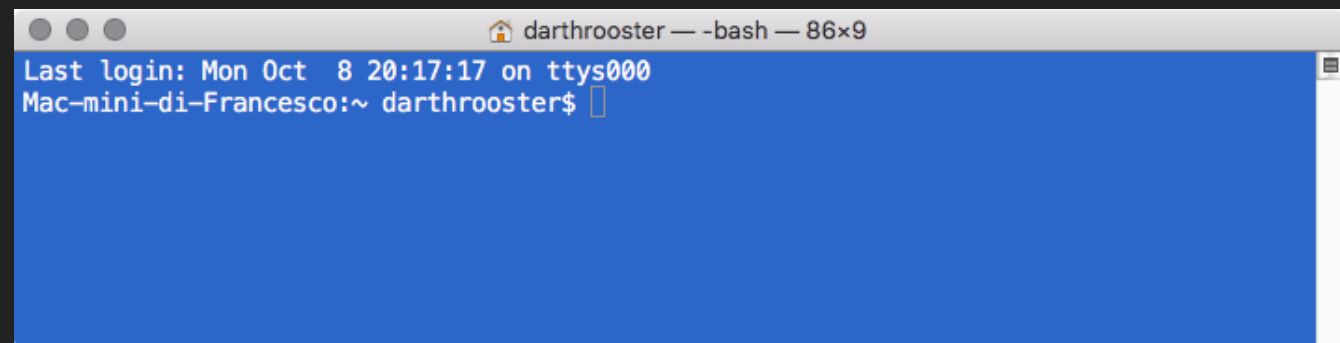
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► Java - Quale editor?

- Linux
- Windows
- Mac

A screenshot of a terminal window with a blue background. The title bar at the top reads 'darthrooster — -bash — 86x9'. The terminal text shows a login message: 'Last login: Mon Oct 8 20:17:17 on ttys000' followed by the prompt 'Mac-mini-di-Francesco:~ darthrooster\$' and a cursor.

```
darthrooster — -bash — 86x9
Last login: Mon Oct 8 20:17:17 on ttys000
Mac-mini-di-Francesco:~ darthrooster$
```

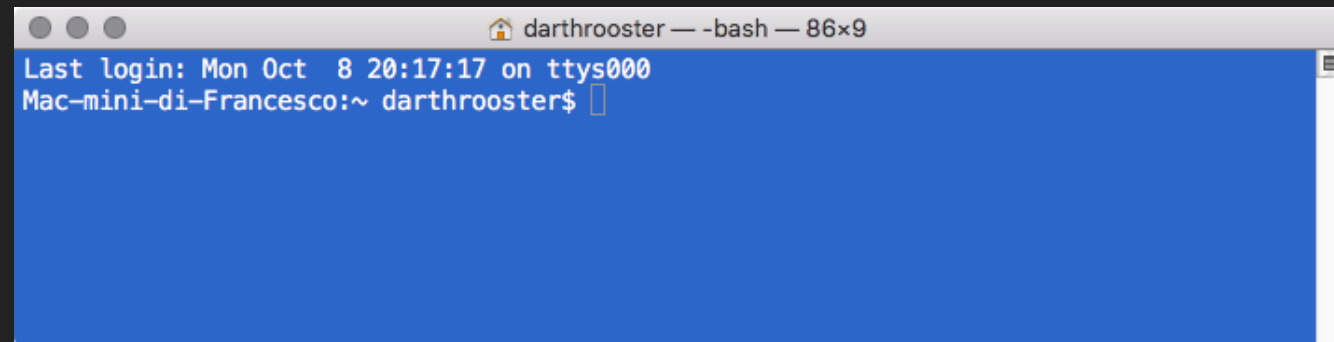
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Qualsiasi editor di testo

JAVA - INSTALLAZIONE

► Java - Quale editor?

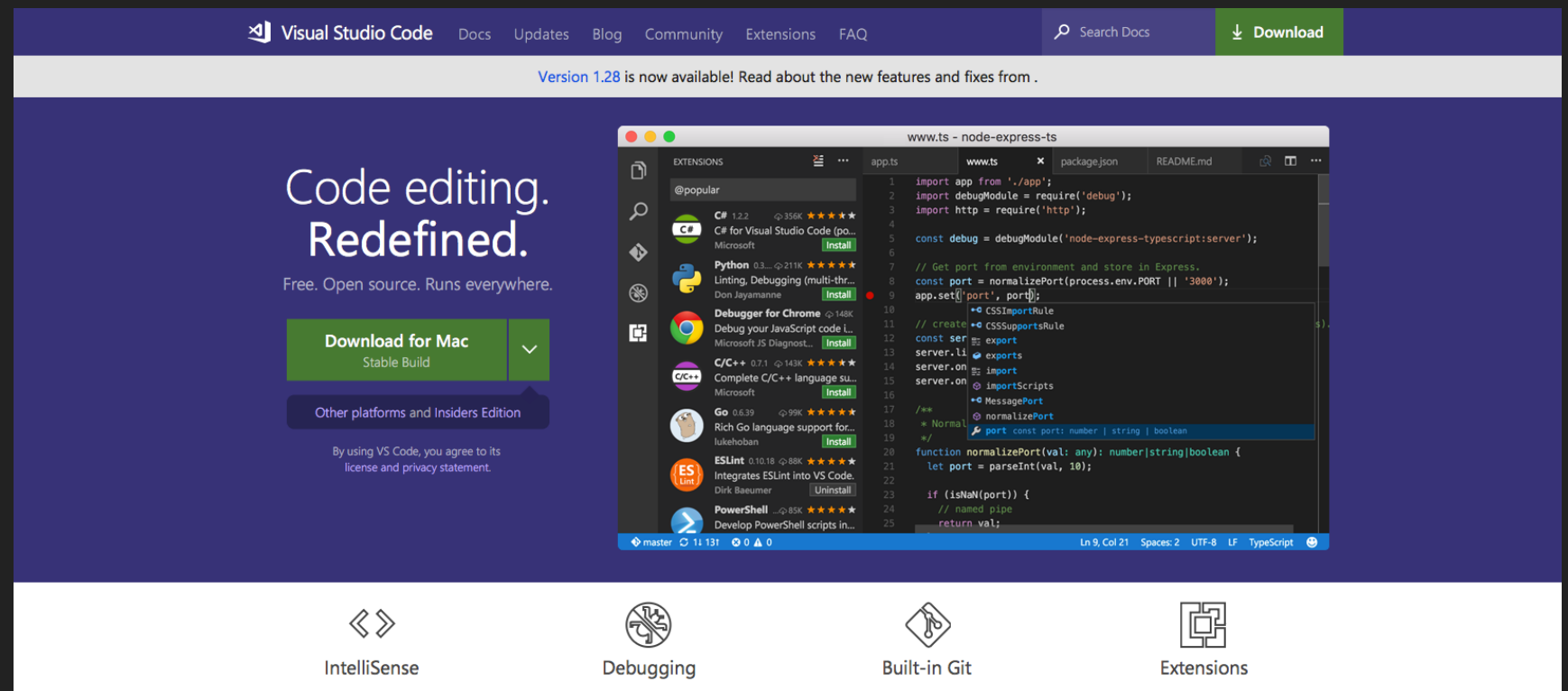
- Linux
- Windows
- Mac



```
darthrooster — -bash — 86x9
Last login: Mon Oct  8 20:17:17 on ttys000
Mac-mini-di-Francesco:~ darthrooster$
```



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```
1 import app from './app';
2 import debugModule = require('debug');
3 import http = require('http');
4
5 const debug = debugModule('node-express-typescript:server');
6
7 // Get port from environment and store in Express.
8 const port = normalizePort(process.env.PORT || '3000');
9 app.set('port', port);
10
11 // create
12 // CSSImportRule
13 // CSSSupportsRule
14 const ser = export
15 server.li
16 server.on
17 server.on
18 // MessagePort
19 // normalizePort
20 // Normal
21 // port const port: number | string | boolean
22 //
23 function normalizePort(val: any): number|string|boolean {
24   let port = parseInt(val, 10);
25   if (isNaN(port)) {
26     // named pipe
27     return val;
28   }
29 }
```

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