

Uvod u programiranje

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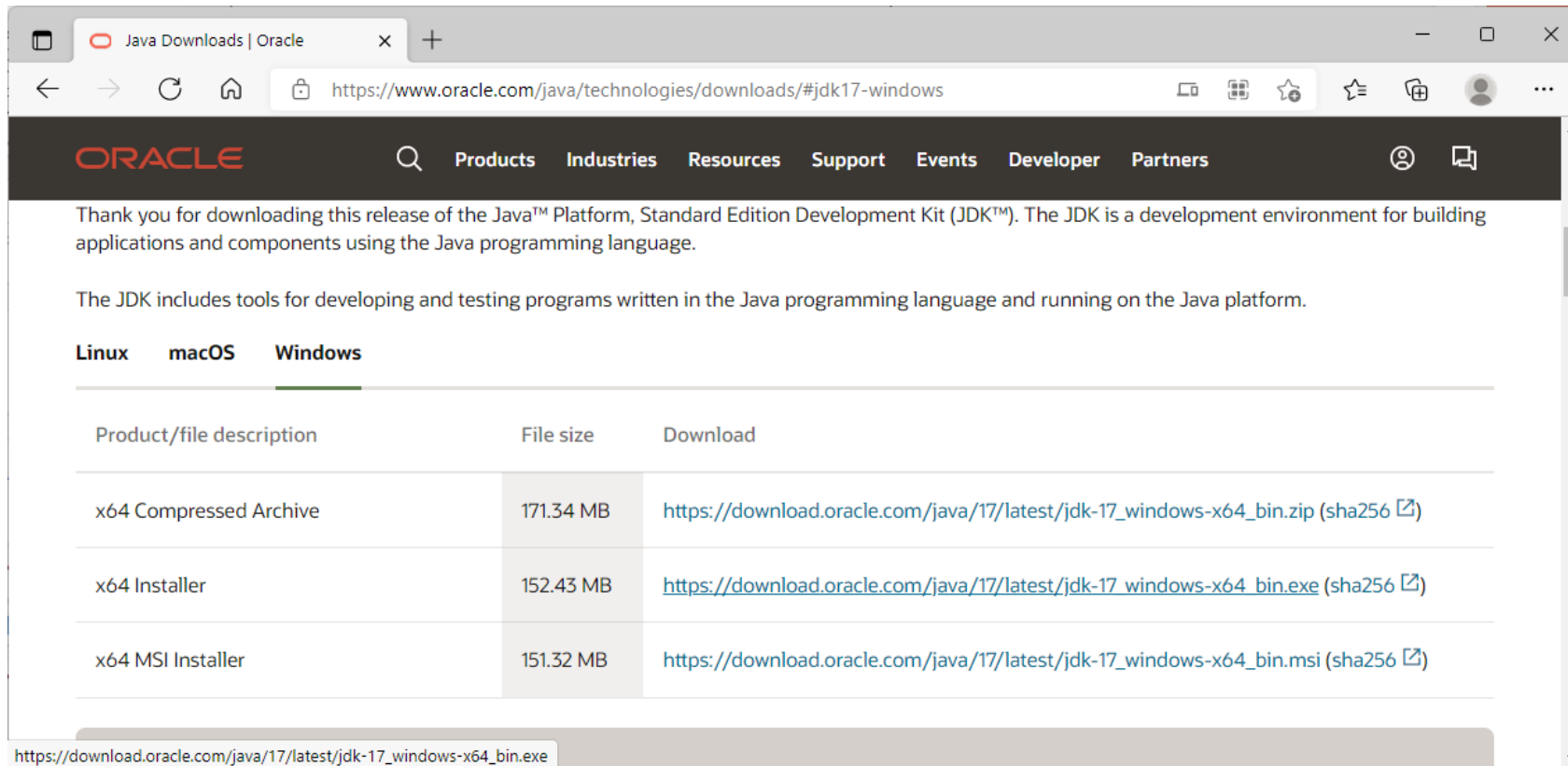
Softver

- Java 17
- VS code



Java 17

- <https://www.oracle.com/java/technologies/downloads/#jdk17-windows>

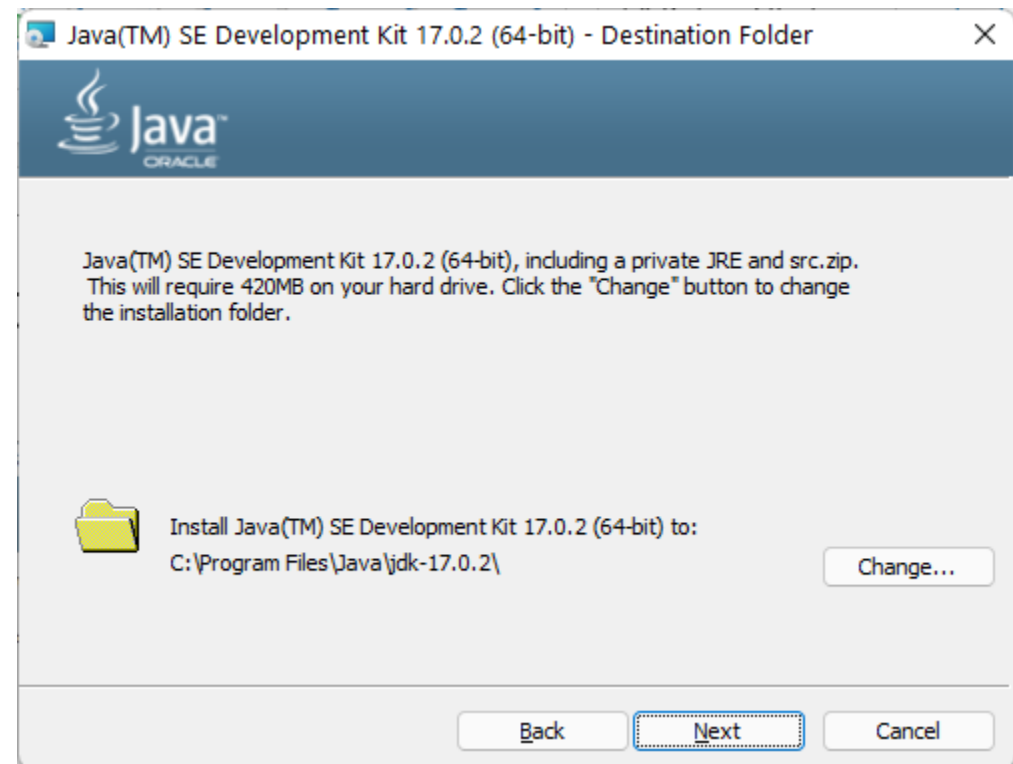
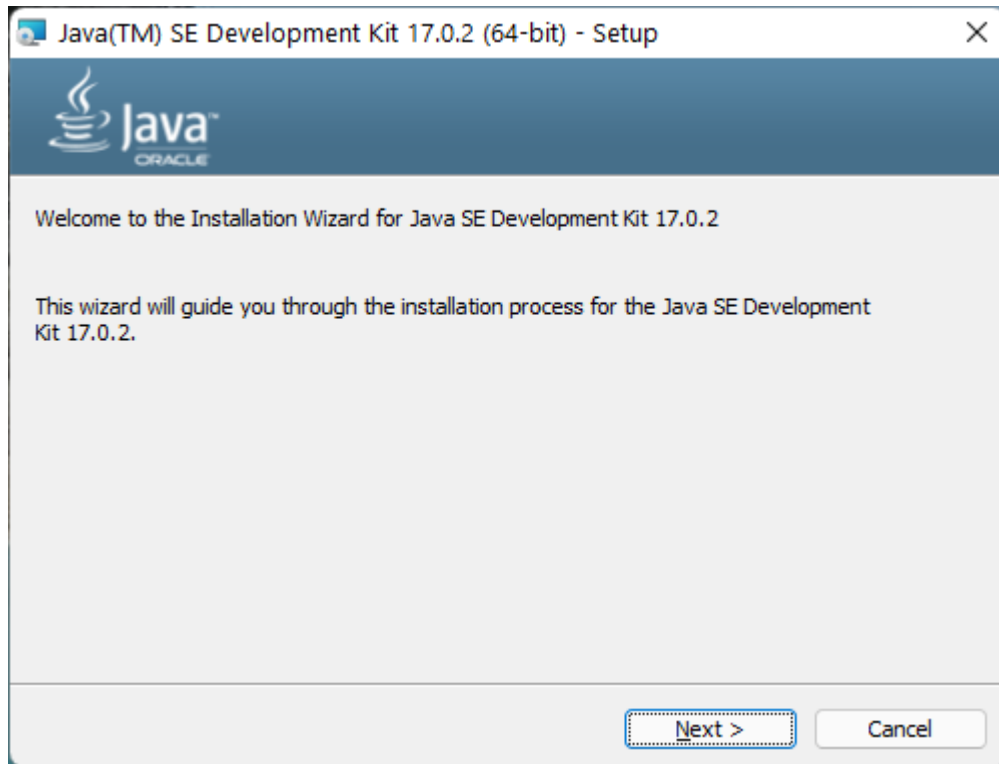


The screenshot shows a web browser window with the Oracle logo and navigation menu at the top. The main content area features a thank-you message and a table of download options for Windows. The table has three columns: Product/file description, File size, and Download. Three download options are listed: x64 Compressed Archive (171.34 MB), x64 Installer (152.43 MB), and x64 MSI Installer (151.32 MB). A status bar at the bottom shows the selected download link.

Product/file description	File size	Download
x64 Compressed Archive	171.34 MB	https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.zip (sha256 ↗)
x64 Installer	152.43 MB	https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.exe (sha256 ↗)
x64 MSI Installer	151.32 MB	https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.msi (sha256 ↗)

https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.exe

Instalacija java



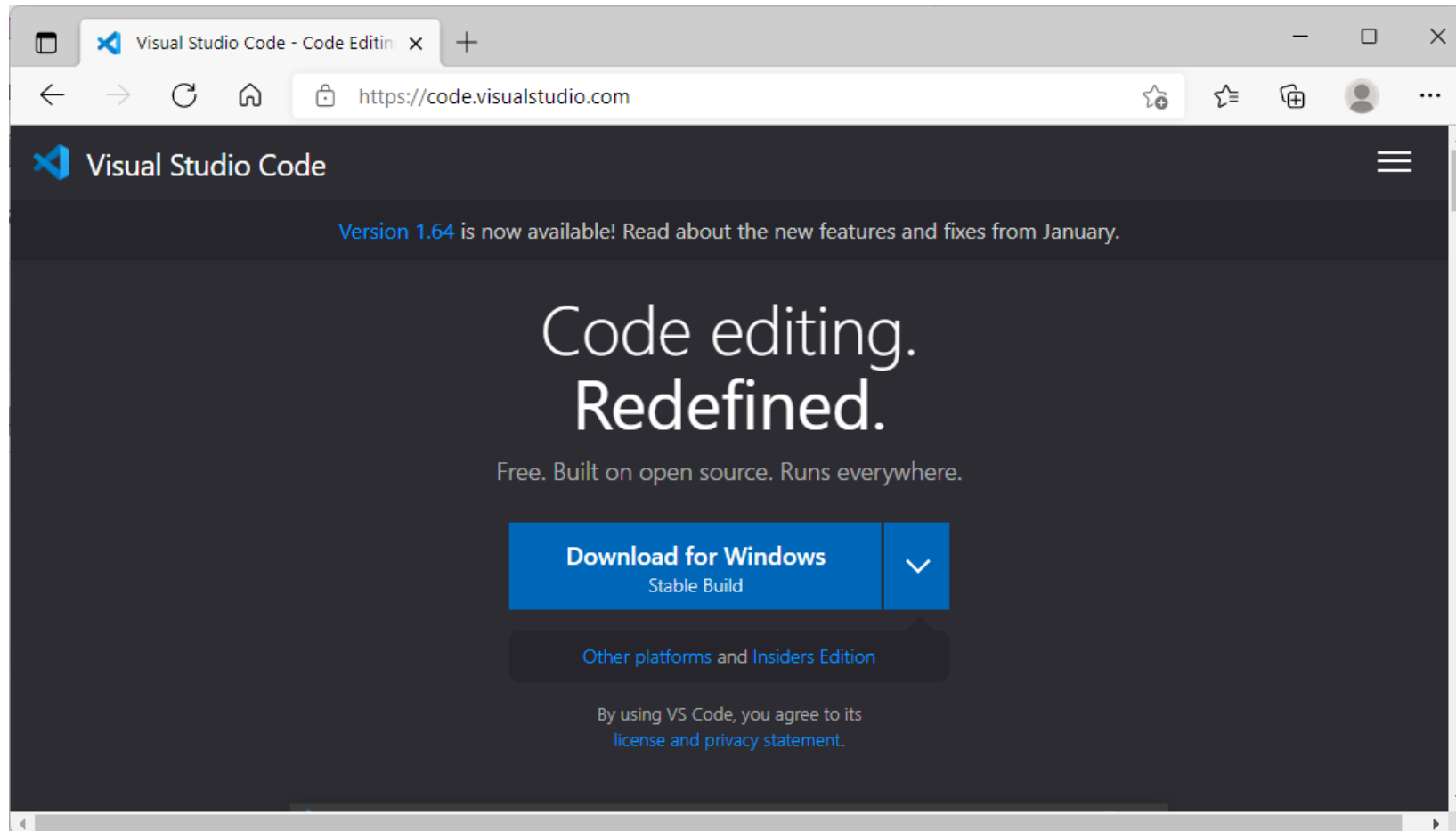
Instalacija java

- C:\Program Files\Java

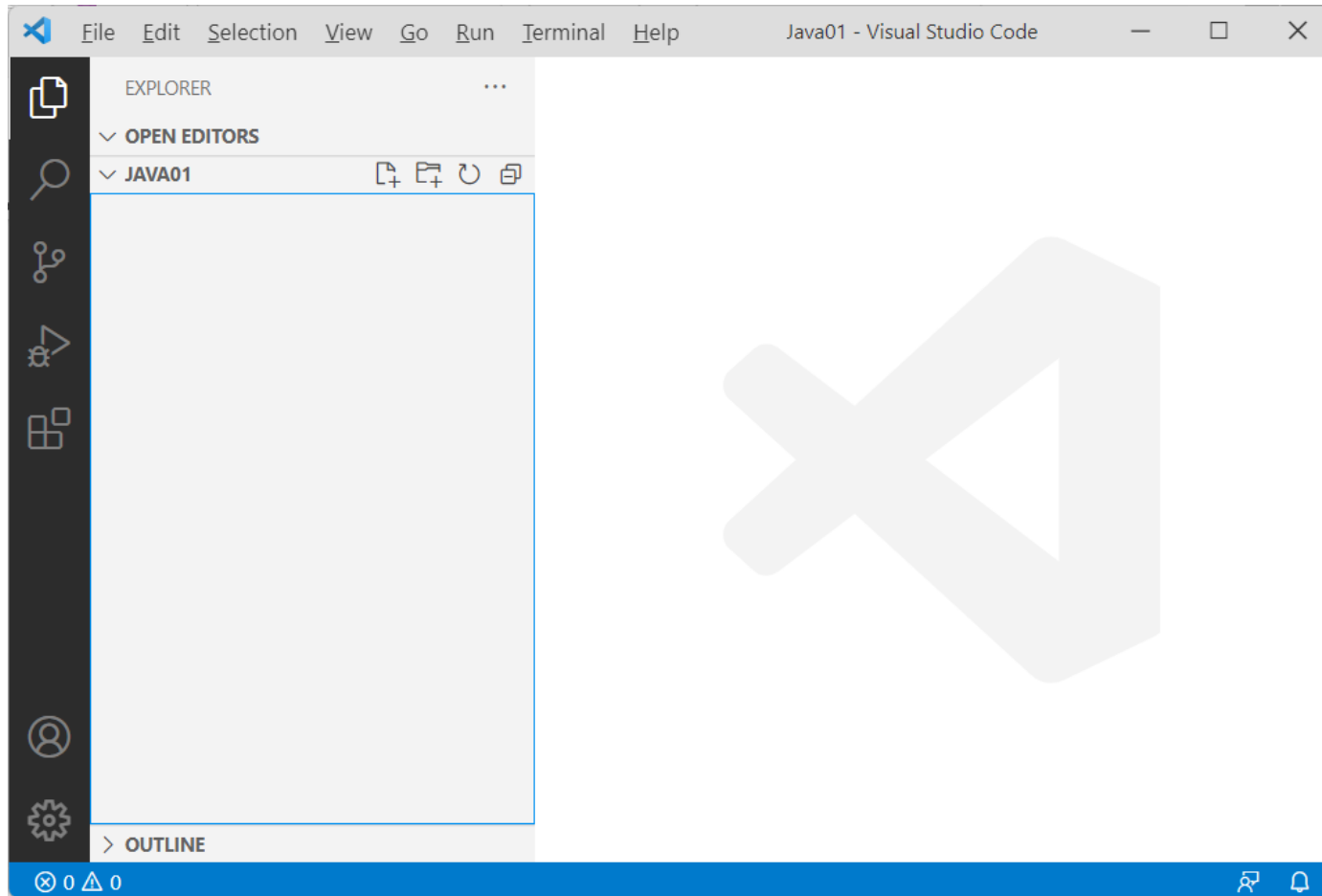


VS code

<https://code.visualstudio.com/>



Okruženje VS code



Prikaz terminala - command prompt

- View->terminal
- CTRL + ` prikazivanje / sakrivanje terminala
- cls brisanje sadržaja terminala
- java -version daje prikaz instalirane java verzije

```
C:\Users\goran\Desktop\java01> java -version
java version "17.0.6" 2023-01-17 LTS
Java(TM) SE Runtime Environment (build 17.0.6+9-LTS-190)
Java HotSpot(TM) 64-Bit Server VM (build 17.0.6+9-LTS-190,
mixed mode, sharing)
PS C:\Users\goran\Desktop\java01>
```


Ekstenzije za javu za VS code okruženje

The screenshot displays the Visual Studio Code interface with the 'Extension Pack for Java' extension page. The main header shows the extension name 'Extension Pack for Java' with version 'v0.21.0' and a 'Preview' badge. It is published by Microsoft, has 11,511,855 downloads, and a 4.5-star rating from 46 reviews. The description states it provides Java IntelliSense and other features. Below the main extension, a section titled 'Extension Pack (6)' lists two sub-extensions: 'Language Support for Java(TM) by Red Hat' (by Red Hat) and 'Debugger for Java' (by Microsoft). The 'Categories' section on the right includes Programming Languages, Linters, Debuggers, Formatters, Snippets, and Extension Packs. The 'Resources' section is partially visible at the bottom.

File Edit Selection View Go Run Terminal Help Extension: Extension Pack for Java - Java01 - Visual Studio...

Extension: Extension Pack for Java X

Extension Pack for Java v0.21.0 Preview

Microsoft | 11,511,855 | ★★★★★ (46)



Popular extensions for Java development that provides Java IntelliSense, ...

Disable Uninstall ⚙️

This extension is enabled globally.

[Details](#) [Feature Contributions](#) [Changelog](#) [Runtime Status](#)

Extension Pack (6)

-  **Language Support for Java(TM) by Red Hat**
Java Linting, Intellisense, formatting, refactor...
Red Hat ⚙️
-  **Debugger for Java**
A lightweight Java debugger for Visual Studi...
Microsoft ⚙️

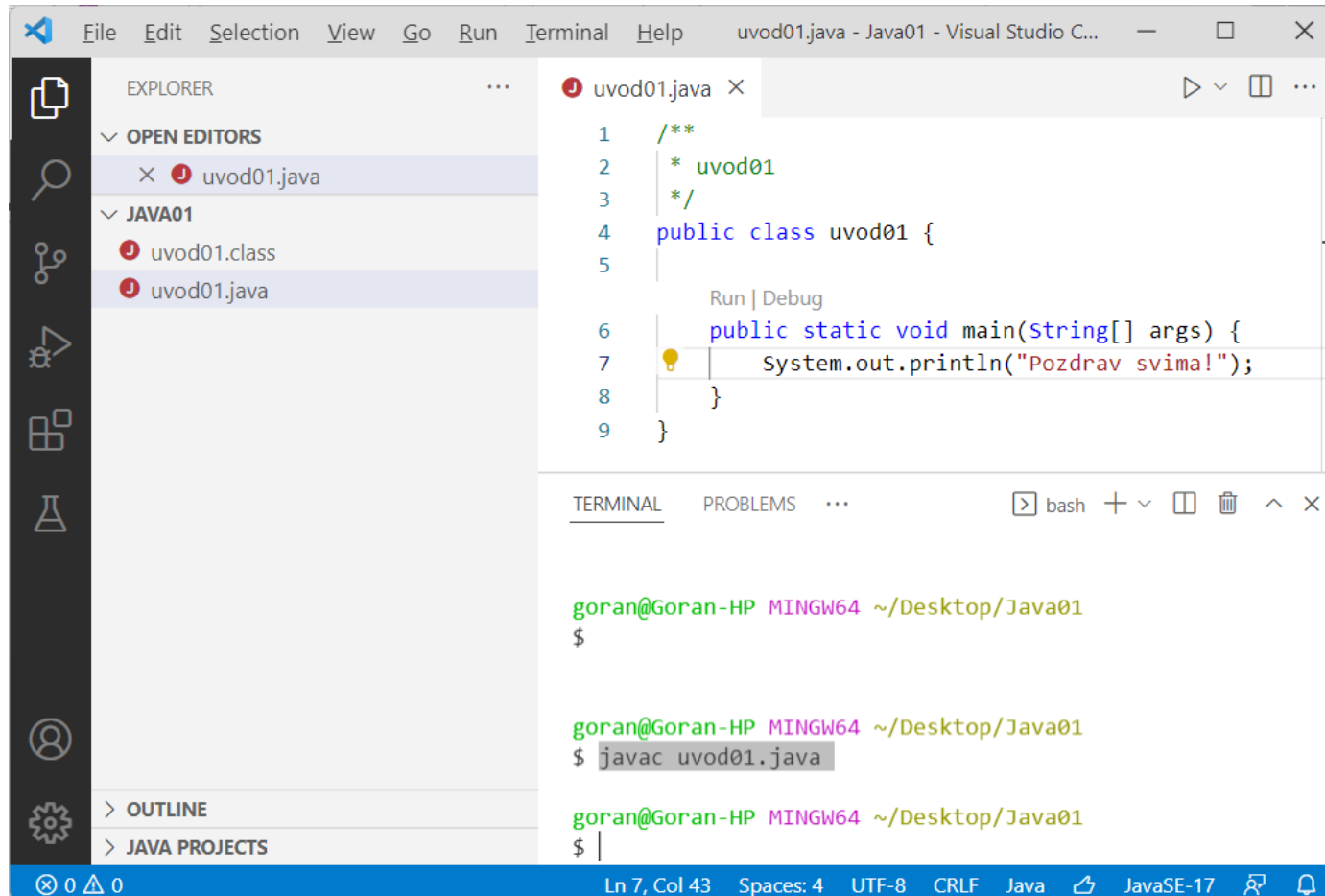
Categories

- Programming Languages
- Linters
- Debuggers
- Formatters
- Snippets
- Extension Packs

Resources

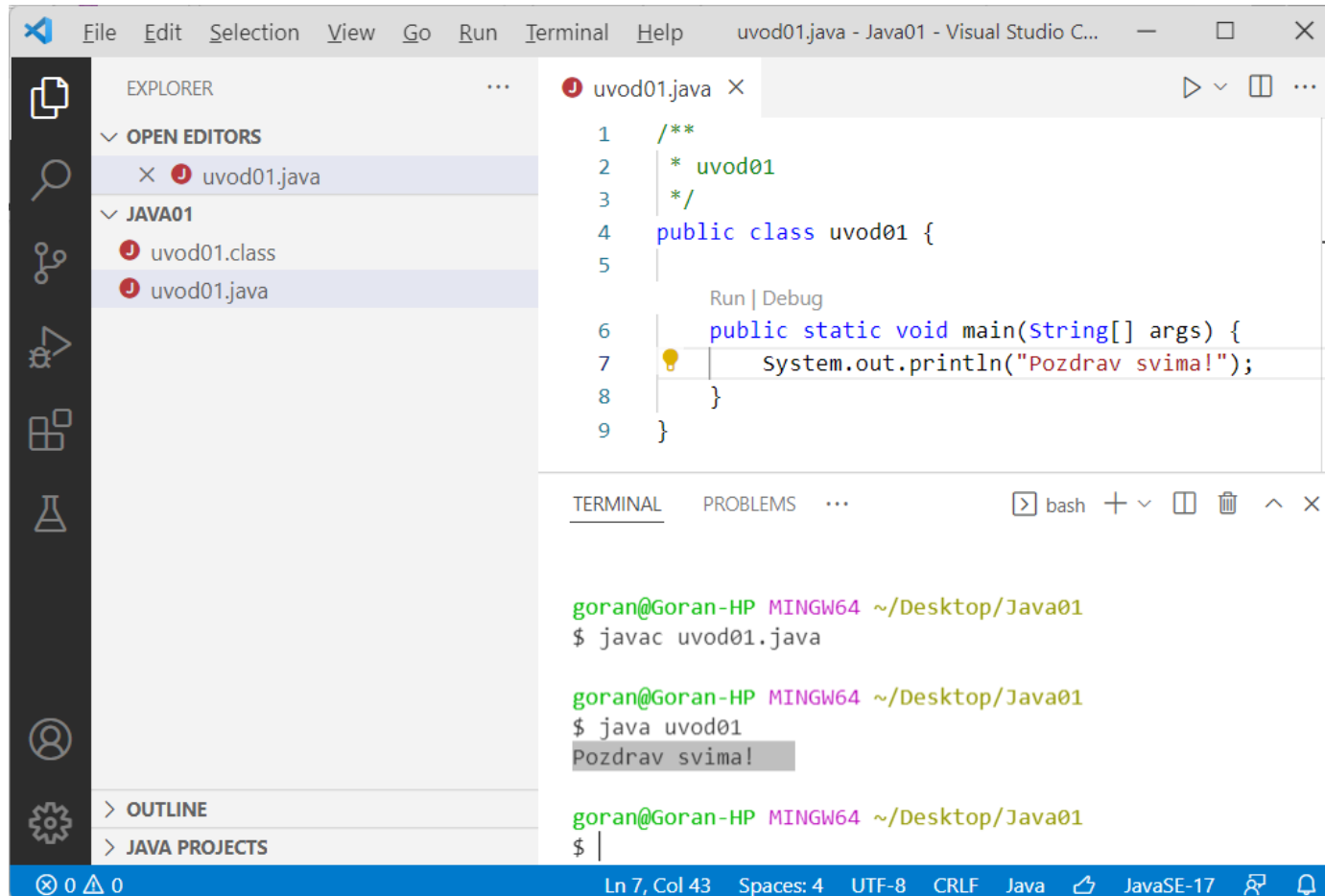
Marketplace

javac kompajliranje java koda



```
File Edit Selection View Go Run Terminal Help uvod01.java - Java01 - Visual Studio C...  
EXPLORER  
OPEN EDITORS  
x uvod01.java  
JAVA01  
uvod01.class  
uvod01.java  
OUTLINE  
JAVA PROJECTS  
uvod01.java x  
1 /**  
2  * uvod01  
3  */  
4 public class uvod01 {  
5  
6     Run | Debug  
7     public static void main(String[] args) {  
8         System.out.println("Pozdrav svima!");  
9     }  
10 }  
TERMINAL PROBLEMS ... bash + - x  
goran@Goran-HP MINGW64 ~/Desktop/Java01  
$  
goran@Goran-HP MINGW64 ~/Desktop/Java01  
$ javac uvod01.java  
goran@Goran-HP MINGW64 ~/Desktop/Java01  
$ |  
Ln 7, Col 43 Spaces: 4 UTF-8 CRLF Java JavaSE-17
```

java – pokretanje java programa



The screenshot displays the Visual Studio Code interface. The Explorer pane on the left shows a project named 'JAVA01' with files 'uvod01.class' and 'uvod01.java'. The Editor pane shows the source code for 'uvod01.java' with a 'Run | Debug' button above the main method. The Terminal pane at the bottom shows the execution of the program, including compilation and execution commands, resulting in the output 'Pozdrav svima!'.

```
File Edit Selection View Go Run Terminal Help uvod01.java - Java01 - Visual Studio C...
EXPLORER
OPEN EDITORS
  x uvod01.java
JAVA01
  uvod01.class
  uvod01.java

uvod01.java
1  /**
2  *  uvod01
3  */
4  public class uvod01 {
5
6      Run | Debug
7      public static void main(String[] args) {
8          System.out.println("Pozdrav svima!");
9      }
10 }

TERMINAL
bash
goran@Goran-HP MINGW64 ~/Desktop/Java01
$ javac uvod01.java

goran@Goran-HP MINGW64 ~/Desktop/Java01
$ java uvod01
Pozdrav svima!

goran@Goran-HP MINGW64 ~/Desktop/Java01
$
```

Ln 7, Col 43 Spaces: 4 UTF-8 CRLF Java JavaSE-17

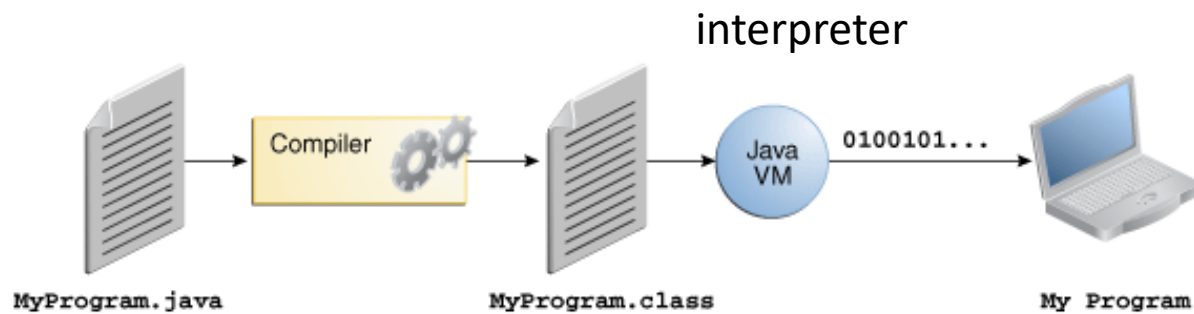
Upotreba java komande (verzija 11 ili veća)

```
java pr01.java
```

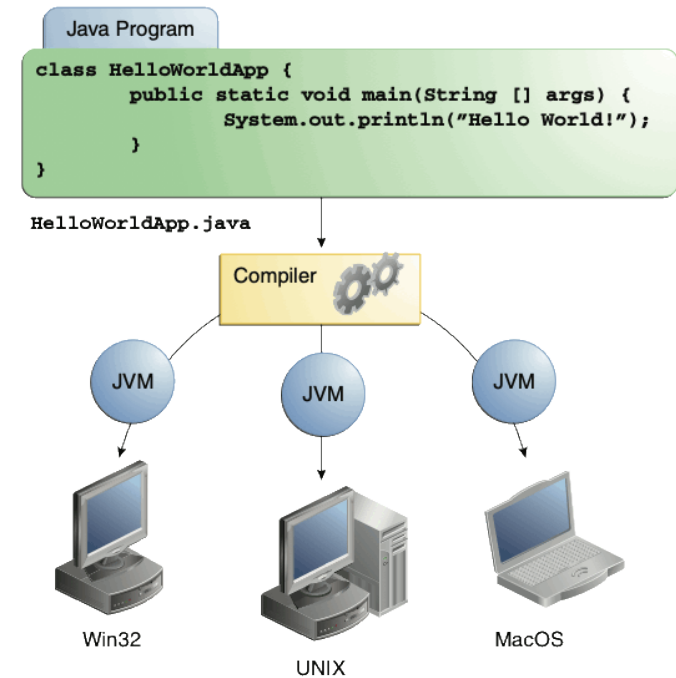
Uvod

- Java je objektno orijentisani programski jezik opšte namene
- Java program se i kompajlira i interpretira
- Kompajliranjem se java program prevodi java bajt kod koji je platformski nezavistan
- Java Virtual Machine (JVM) omogućava izvršavanje java bytecode tako što ga interpretira i konvertuje ga u instrukcije koje operativni sistem može da razume
- Kompajliranje java koda se izvršava samo jedanput, dok se interpretiranje dešava svaki put kada se program izvršava

Izvršavanje java koda



JVM – java virtuelna mašina



Prvi java program

```
public static void main(String[] args) {  
    System.out.println("Pozdrav svima");  
}
```

main - code snippet kreira kostur main funkcije

sout – code snippet kreira System.out.println();

Prvi java program

- Izvršavanje programa počinje od `main()` funkcije
- U java aplikaciji može postojati samo jedna `main()` funkcija
- Java razlikuje velika i mala slova
- Klasa `System` ima polje **`out`** koje vraća tzv. `PrintStream` koji se koristi za štampu karaktera na standardni izlaz - monitor
- Metoda **`println()`** štampa sadržaj koji joj se prosledi na standardni izlaz nakon čega kursor prelazi u sledeći red

Pisanje komentara

- Komentar je tekst koji se ignoriše od strane kompajlera
- Komentar u jednoj liniji piše se korišćenjem znaka //
- Komentar u više linija /* */

```
public static void main(String[] args) {  
    // System.out.println("Pozdrav svima!");  
    System.out.println("Java");  
    System.out.println("programiranje");  
}
```

```
public static void main(String[] args) {  
    /*System.out.println("Pozdrav svima!");  
    System.out.println("Java");*/  
    System.out.println("programiranje");  
}
```

Neke prečice u VS code

- Shift + End selekcije od tekuće pozicije kursora do kraja linije
- Shift + Home selekcija od tekuće pozicije kursora do početka linije
- Shift + ↓ selekcija linije na dole
- Shift + ↑ selekcija linije na gore
- CTRL K + CTRL C - komentar
- CTRL K + CTRL U - uklanjanje komentara

Osnove java jezika

Formatiranje java koda

- Program je skup instrukcija – naredbi
- Naredba se završava oznakom ;
- Iako je moguće pisati više naredbi u istoj liniji, dobra je praksa da se u svakoj liniji piše samo po jedna naredba
- Prazan prostor u editoru koda se ignoriše od strane kompajlera
- Grupisanje naredbi (kreiranje bloka naredbi) vrši se korišćenjem vitičastih zagrada {...}

```
{  
// pocetak bloka naredbi  
naredba1;  
naredba2;  
// kraj bloka naredbi  
}
```

Identifikatori

- Imena ili identifikatori se koriste za označavanje osnovnih objekta jezika: konstanti, promenljivih, funkcija i tipova podataka
- Ime može sadržati slovo, cifru i znak podvlačenja _
- Ime ne sme počinjati cifrom
- U svojstvu imena ne smeju se koristiti rezervisane reči jezika
- Velika i mala slova se razlikuju (x i X su dve različite promenljive)

Ugrađeni tipovi podataka

- Ugrađeni tipovi podataka su oni koje obezbeđuje programski jezik Java
- Tipovi se koriste za deklarisanje promenljivih i konstanti
- Promenljive se moraju deklarirati pre nego što mogu da se koriste
- Promenljive čuvaju različite tipove podataka
- Moguće je definisati sopstvene tipove podataka

Celobrojni tipovi podataka

- byte
 - zauzima 1 bajt u memoriji
 - opseg -2^7 do $2^7 - 1$ (-128 do 127)
- short
 - zauzima 2 bajta u memoriji
 - opseg -2^{15} do $2^{15} - 1$ (-32768 do 32767)
- int
 - zauzima 4 bajta u memoriji
 - opseg -2^{31} do $2^{31}-1$
- long
 - zauzima 8 bajtova u memoriji
 - opseg -2^{63} do $2^{63}-1$

Celi brojevi

```
public static void main(String[] args) {  
    int a; // deklaracija  
    a = 5; // inicijalizacija  
    System.out.println(a);  
  
    a = 10;  
    System.out.println(a);  
  
    int b = 10; // deklaracija i inicijalizacija  
    System.out.println("b= " + b);  
  
    b = Integer.MAX_VALUE;  
    System.out.println(b);  
}
```


Realni tipovi podataka

- float
 - zauzima 4 bajta u memoriji
 - do 7 decimalnih mesta
- double
 - zauzima 8 bajtova u memoriji
 - do 15 decimalnih mesta

Realni tipovi

```
public static void main(String[] args) {  
    float f1 = 3.5f;  
    System.out.println(f1);  
  
    int a = 20;  
    f1 = a; // implicitna konverzija  
    System.out.println(f1);  
  
    double d1 = 5.45;  
    System.out.println(d1);  
    a = (int) d1; // eksplicitna konverzija  
    System.out.println(a);  
}
```

Logički tip boolean

```
public static void main(String[] args) {  
    boolean da = true;  
    boolean ne = false;  
  
    System.out.println(da);  
    System.out.println(ne);  
}
```

Znakovni tip char

```
public static void main(String[] args) {  
    char ch1 = 'a';  
    char ch2 = '5';  
  
    boolean slovo = Character.isLetter(ch1);  
    boolean broj = Character.isDigit(ch2);  
  
    System.out.println(slovo);  
    System.out.println(broj);  
}
```

Specijalni karakteri

```
public static void main(String[] args) {  
    char c1 = '\n';  
    char c2 = '\t';  
    char c3 = '\'';  
    char c4 = '\"';  
  
    System.out.print("Prvi red");  
    System.out.print(c1);  
    System.out.print(c2);  
    System.out.print(c3);  
    System.out.print(c4);  
}
```

Stringovi

```
public static void main(String[] args) {  
    String s1 = "Pozdrav svima";  
    String s2 = "Pozdrav\t\tsvima";  
    String s3 = "Pozdrav\nsvima";  
  
    System.out.println(s1);  
    System.out.println(s2);  
    System.out.println(s3);  
}
```

```
System.out.println("\\t");
```

Definisanje konstante u javi - final

```
public static void main(String[] args) {  
    final int a = 5;  
    System.out.println(a);  
    //a =8;  
}
```