

Área académica:

Tecnologías de la Información y Comunicación

Carrera:

Licenciatura en ingeniería en tecnologías de la información e
Innovación digital (DSM)

Materia:

Estructura de Datos

U3 Práctica Guiada: Implementación de un Árbol Binario

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Grupo:

GTID 141

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Lugar de entrega:

"Dolores Hidalgo C.I.N., Gto."

Implementacion del codigo en cada clase:

Clase NodoArbol

```
1 package arbolbinario;
2
3 /**
4 * 
5 * @author angellunaperez
6 */
7 public class NodoArbol {
8     private int dato;
9
10    public NodoArbol hijoIzquierdo;
11    public NodoArbol hijoDerecho;
12
13    public NodoArbol(int valor) {
14        this.dato = valor;
15        this.hijoIzquierdo = null;
16        this.hijoDerecho = null;
17    }
18
19    // -----
20    // MÉTODOS GETTERS Y SETTERS (Encapsulamiento)
21    // -----
22
23    // Getter para obtener el dato
24    public int getData() {
25        return dato;
26    }
27    // Setter para modificar el dato (Si fuera necesario)
28    public void setData(int nuevoDato) {
29        this.dato = nuevoDato;
30    }
31}
32
```

Clase ArbolBinario

Clase PruebaArbol

```
1 package arbolbinario;
2
3 /**
4 *
5 * @author angellunaperez
6 */
7
8 public class PruebaArbol {
9     public static void main(String[] args) {
10         // 1. Crear una instancia de la clase gestora del árbol
11         ArbolBinario arbol = new ArbolBinario();
12
13         System.out.println("Insertando valores: 50, 30, 70, 20, 40");
14         |
15         // 2. Insertar valores usando el método público
16         arbol.insertar(50); // Raíz
17         arbol.insertar(30); // Izquierda de 50
18         arbol.insertar(70); // Derecha de 50
19         arbol.insertar(20); // Izquierda de 30
20         arbol.insertar(40); // Derecha de 30
21
22         // 3. Ejecutar el recorrido para verificar el orden
23         // Resultado esperado (ordenado): 20 30 40 50 70
24         arbol.recorrerInorden();
25     }
26 }
```

Prueba 1

```

-----< com.mycompany:Unidad3 >-----
] Building Unidad3 1.0-SNAPSHOT
  from pom.xml
-----[ jar ]-----

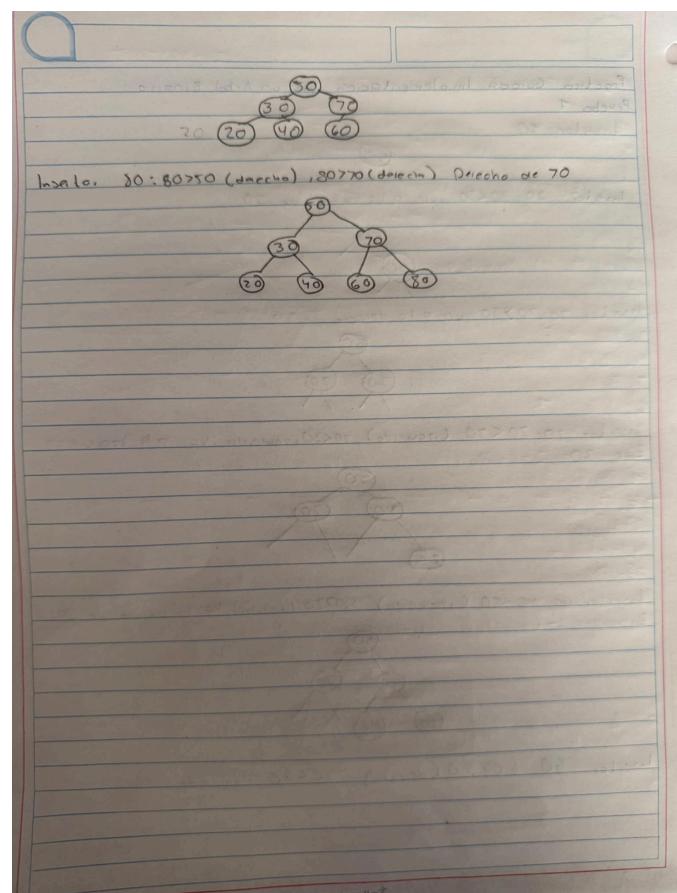
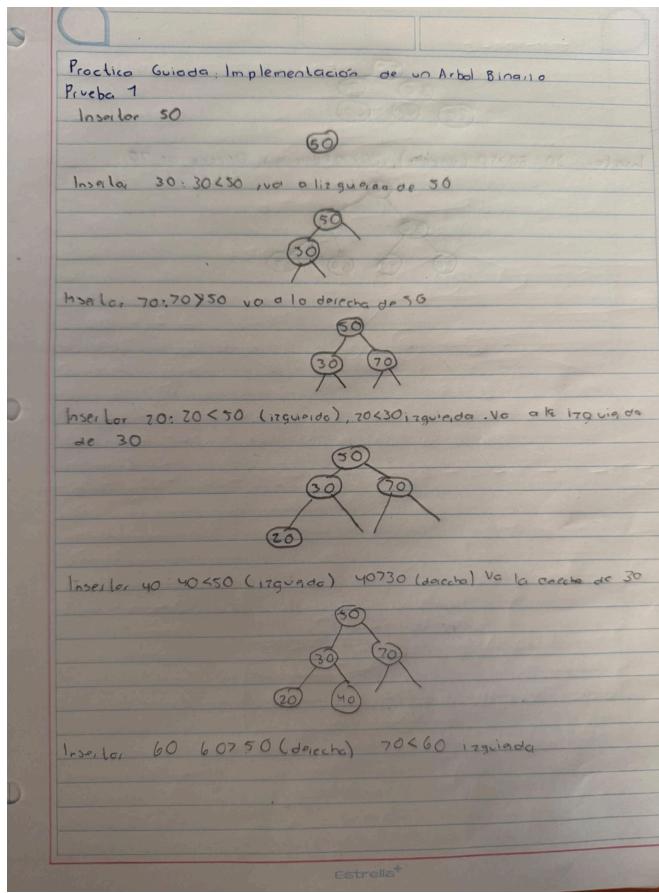
] --- resources:3.3.1:resources (default-resources) @ Unidad3 ---
- skip non existing resourceDirectory /Users/angellunaperez/NetBeansProjects/Unidad3

] --- compiler:3.13.0:compile (default-compile) @ Unidad3 ---
- Nothing to compile - all classes are up to date.

] --- exec:3.1.0:exec (default-cli) @ Unidad3 ---
Insertando valores: 50, 30, 70, 20, 40
- Recorrido Inorden: 20 30 40 50 70

-----
BUILD SUCCESS
-----
Total time: 0.373 s
Finished at: 2025-11-25T14:03:52-06:00
-----
```

Dibujo en Libreta



Prueba 2

```

Output - Run (PruebaArbol) x
cd /Users/angellunaperez/NetBeansProjects/Unidad3; "JAVA_HOME=/Applications
WARNING: A terminally deprecated method in sun.misc.Unsafe has been called
WARNING: sun.misc.Unsafe::staticFieldBase has been called by com.google.inje
WARNING: Please consider reporting this to the maintainers of class com.goog
WARNING: sun.misc.Unsafe::staticFieldBase will be removed in a future release
Scanning for projects...

-----< com.mycompany:Unidad3 >-----
Building Unidad3 1.0-SNAPSHOT
  from pom.xml
  [ jar ]---

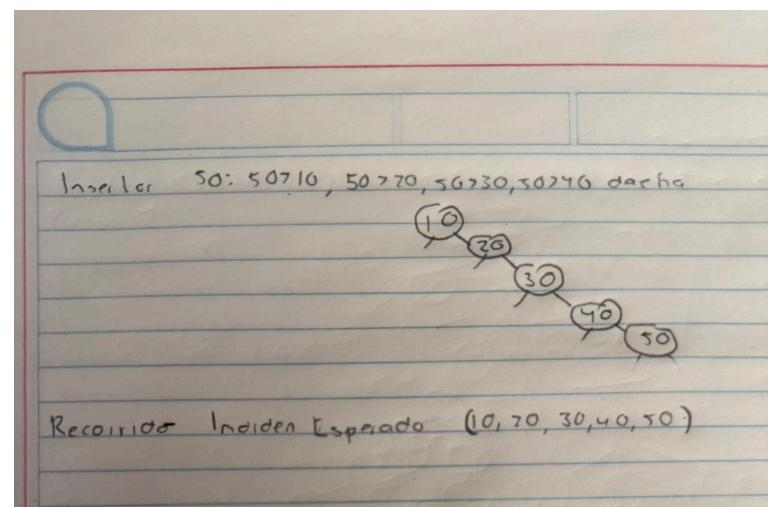
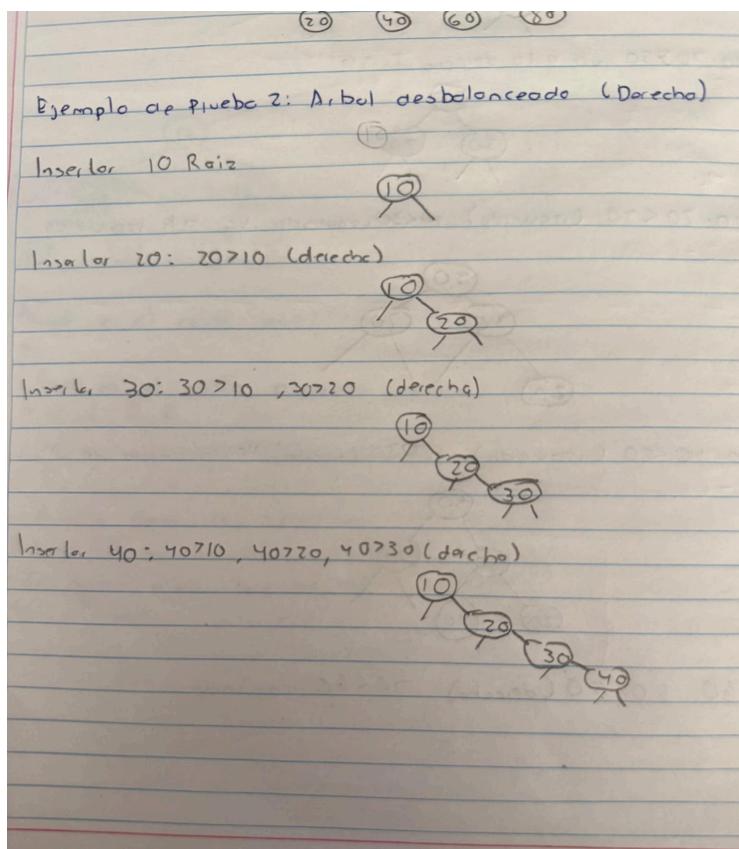
resources:3.3.1:resources (default-resources) @ Unidad3 ---
skip non existing resourceDirectory /Users/angellunaperez/NetBeansProjects/U

compiler:3.13.0:compile (default-compile) @ Unidad3 ---
Recompiling the module because of changed source code.
Compiling 5 source files with javac [debug release 24] to target/classes

exec:3.1.0:exec (default-cli) @ Unidad3 ---
Insertando valores: 50, 30, 70, 20, 40
Recorrido Inorden: 10 20 30 40 50

BUILD SUCCESS
-----
Total time: 0.677 s
Finished at: 2025-11-25T14:11:59-06:00
-----
```

Dibujo en Libreta



Prueba 3

```

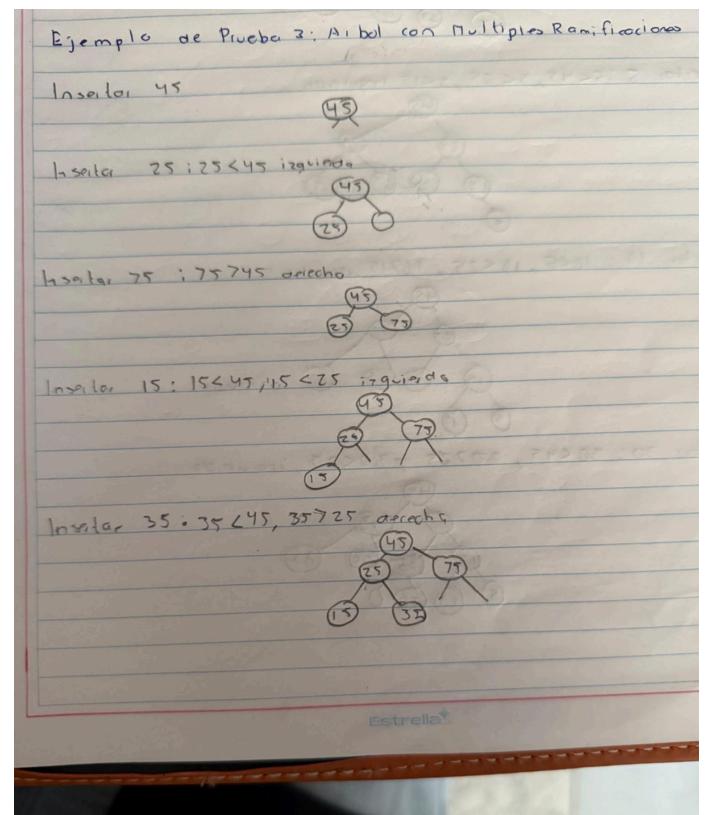
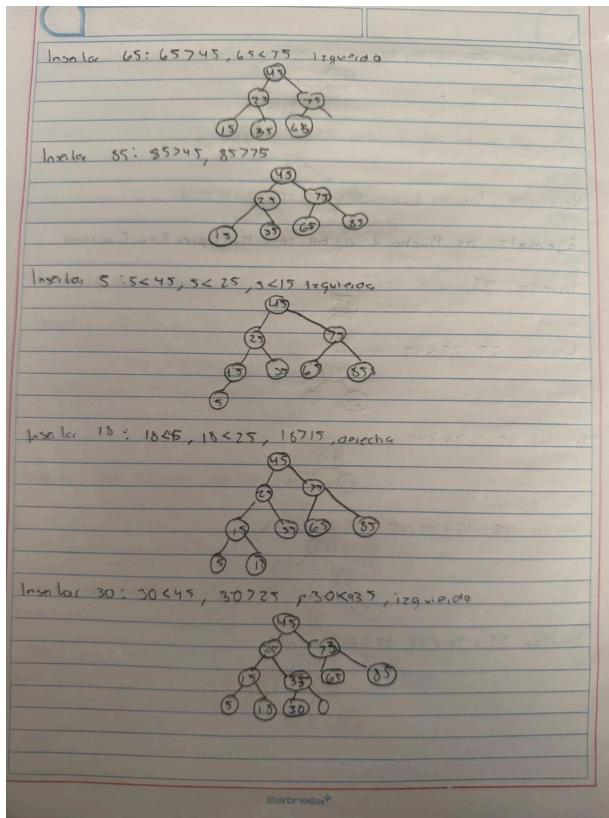
Output - Run (PruebaArbol) x
cd /Users/angellunaperez/NetBeansProjects/Unidad3; "JAVA_HOME=/Applications/
WARNING: A terminally deprecated method in sun.misc.Unsafe has been called
WARNING: sun.misc.Unsafe::staticFieldBase has been called by com.google.inje
WARNING: Please consider reporting this to the maintainers of class com.goog
WARNING: sun.misc.Unsafe::staticFieldBase will be removed in a future releas
Scanning for projects...

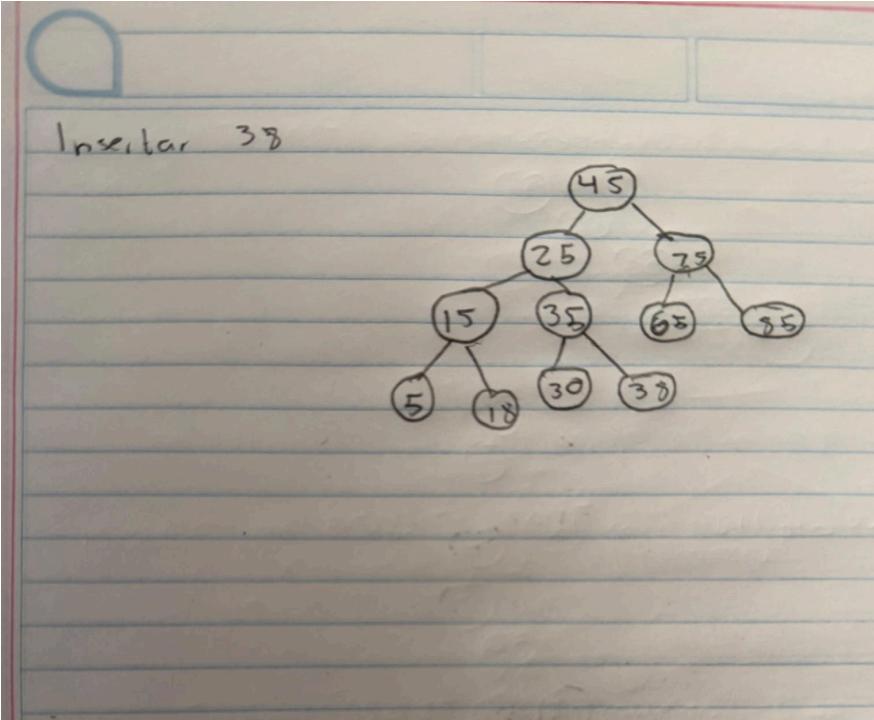
-----< com.mycompany:Unidad3 >-----
[INFO] Building Unidad3 1.0-SNAPSHOT
[INFO]   from pom.xml
----- [ jar ] ----

[INFO] --- resources:3.3.1:resources (default-resources) @ Unidad3 ---
[INFO]   skip non existing resourceDirectory /Users/angellunaperez/NetBeansProjects/U
[INFO] --- compiler:3.13.0:compile (default-compile) @ Unidad3 ---
[INFO]   Recompiling the module because of changed source code.
[INFO]   Compiling 5 source files with javac [debug release 24] to target/classes
[INFO] --- exec:3.1.0:exec (default-cli) @ Unidad3 ---
[INFO]   Insertando valores: 50, 30, 70, 20, 40
[INFO]   Recorrido Inorden: 5 15 18 25 30 35 38 45 65 75 85
-----< com.mycompany:Unidad3 >-----

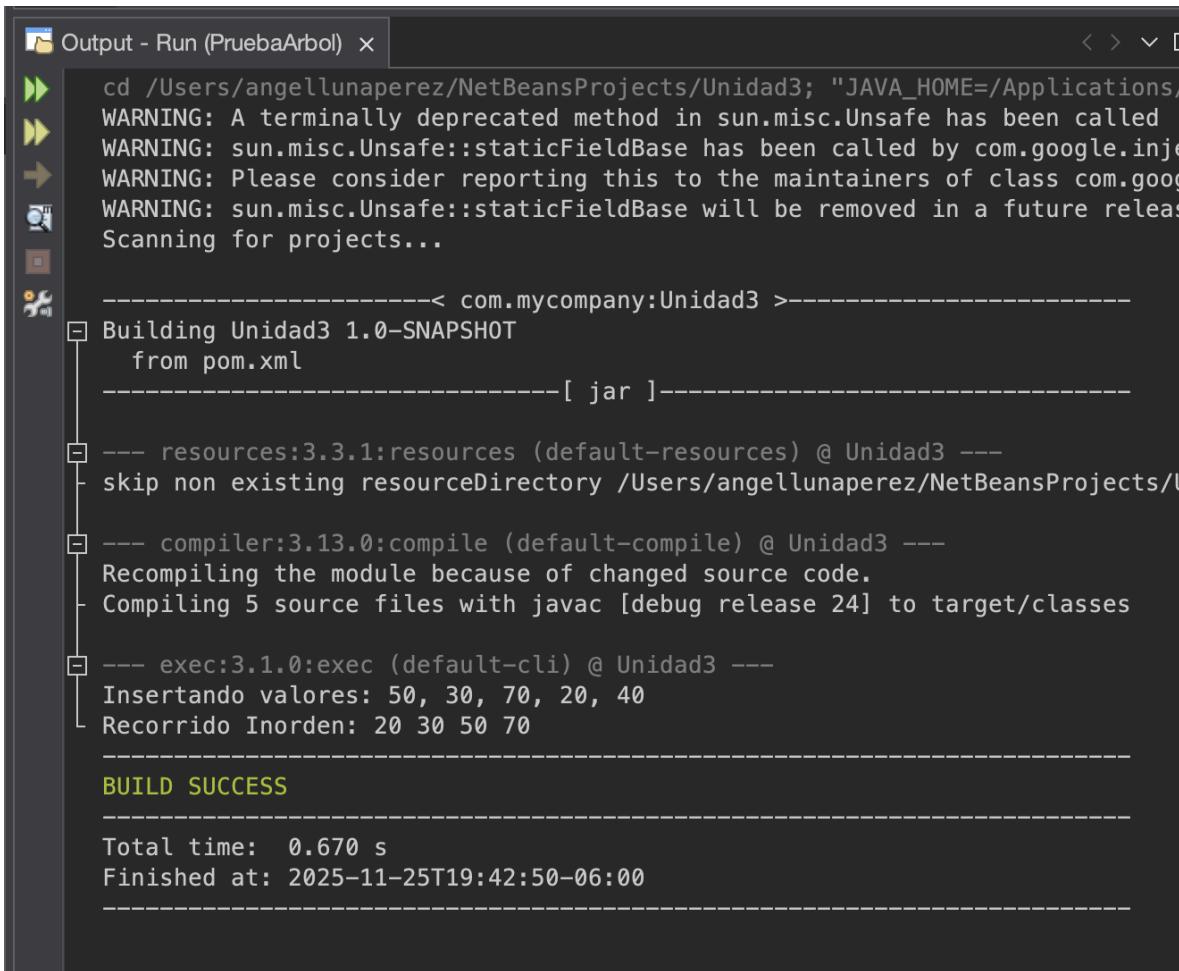
BUILD SUCCESS
-----
Total time: 0.684 s
Finished at: 2025-11-25T14:17:31-06:00
-----
```

Dibujo en el cuaderno





Prueba 4



The screenshot shows the NetBeans IDE's Output window for a project named "PruebaArbol". The window displays the terminal output of a Maven build process. The output includes several warning messages about deprecated methods in sun.misc.Unsafe, followed by a message about scanning for projects. It then shows the building of a module named "Unidad3" from a pom.xml file, resulting in a jar file. The build continues through resource handling, compilation (recompiling due to changed source code), and execution (executing a script that inserts values 50, 30, 70, 20, 40 into a binary search tree and performing an in-order traversal). The build concludes with a "BUILD SUCCESS" message, a total time of 0.670 seconds, and a finished timestamp of 2025-11-25T19:42:50-06:00.

```
cd /Users/angellunaperez/NetBeansProjects/Unidad3; "JAVA_HOME=/Applications/WARNING: A terminally deprecated method in sun.misc.Unsafe has been calledWARNING: sun.misc.Unsafe::staticFieldBase has been called by com.google.inject.WARNING: Please consider reporting this to the maintainers of class com.google.gson.WARNING: sun.misc.Unsafe::staticFieldBase will be removed in a future releaseScanning for projects...-----< com.mycompany:Unidad3 >-----[-] Building Unidad3 1.0-SNAPSHOT from pom.xml-----[ jar ]-----[-] --- resources:3.3.1:resources (default-resources) @ Unidad3 ---skip non existing resourceDirectory /Users/angellunaperez/NetBeansProjects/Unidad3-----[-] --- compiler:3.13.0:compile (default-compile) @ Unidad3 ---Recompiling the module because of changed source code.Compiling 5 source files with javac [debug release 24] to target/classes-----[-] --- exec:3.1.0:exec (default-cli) @ Unidad3 ---Insertando valores: 50, 30, 70, 20, 40Recorrido Inorden: 20 30 50 70-----BUILD SUCCESS-----Total time: 0.670 sFinished at: 2025-11-25T19:42:50-06:00-----
```

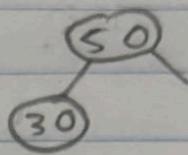
Dibujo en el cuaderno

Ejemplo de Prueba 4

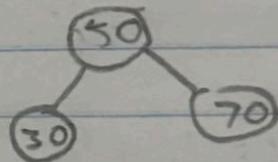
Insertar 50



Insertar 30 : $30 < 50$



Insertar 70 : $70 > 50$ derecha



Insertar 30 : Ya existe (se ignora)

Insertar 50 : Ya existe (se ignora)

Insertar 20 : $20 < 50$, $20 < 30$

