

Jewel Java



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What is Amber again?



JDK Projects?

“ A Project is a collaborative effort to produce a specific artifact, which may be a body of code, or documentation, or some other material.

— OpenJDK Bylaws section 6

Project Amber?

“ The goal of Project Amber is to explore and incubate smaller, productivity-oriented Java language features

— Project Amber main page

JEP?

“ An enhancement is an effort to design and implement a nontrivial change to the JDK code base or to do some other kind of work whose goals, progress, and result are worth communicating broadly

— JEP 1

Ambers' Syntactic Sugar



JEP 286

Local-Variable Type Inference landed in Java 10

```
List<String> lineList = new ArrayList<String>();  
// less duplication  
var lines = new ArrayList<String>();  
final var readLines = lines.size();
```

JEP 323

Local-Variable Syntax for Lambda Parameters landed in Java 11

```
BiConsumer<Consumer<String>, String> sink
    = (x, y) -> x.accept(y);
// now with Annotations!
BiConsumer<Consumer<String>, String> safeSink
    = (@Nonnull var x, var y) -> x.accept(y);
```


JEP 378

Multi-line Text Blocks landed in Java 11

```
String helloWorldResponse = """
    <html>
      <body>
        <p>Hello, world</p>
      </body>
    </html>
    """;
```

JEP 361

Switch Expressions landed in Java 14

```
int j = switch (day) { // enum Days {MONDAY, ...}
    case MONDAY, WEDNESDAY -> 0;
    case TUESDAY -> 1;
    default -> {
        int k = day.toString().length();
        yield k;
    }
};
```

JEP 361

no more NullPointerExceptions 🎉

```
int j = switch (day) { // enum Days {MONDAY, ...}
  case null, MONDAY -> 0;
  case TUESDAY -> 1;
  default -> {
    int k = day.toString().length();
    yield k;
  }
};
```

JEP 361

exhaustive, default or compilation error 🎉

```
boolean goToWork = switch (day) { // enum Days {MONDAY, ...}
    case null, MONDAY, TUESDAY, WEDNESDAY,
        THURSDAY, FRIDAY -> true;
    case SATURDAY, SUNDAY -> false;
};
```

Type Enhancements



JEP 359

Records landed in Java 16

```
record Range(int low, int high) {  
    Range {  
        if (low > high)  
            throw new IllegalArgumentException(/*...*/);  
    }  
    int lenght() { return high - low; }  
}
```

JEP 359

normal final class \Rightarrow usual overloading

```
record Range(List<Integer> values) {  
    Range(List<Integer> values) {  
        this.values = List.copyOf(values);  
    }  
    Range(Integer i1, Integer i2) {  
        this(List.of(i1, i2));  
    }  
}
```

JEP 409

Sealed Classes landed in Java 17

```
sealed interface Shape {  
    sealed class Cornered implements Shape {}  
    final class Weirdo implements Shape {}  
}
```


JEP 409

different compile Unit \Rightarrow `permits` needed

```
sealed interface Cornered implements Shape
    permits Rectangle, Square {}

final class Rectangle implements Cornered {}
final class Square() implements Cornered {}
```

JEP 409

sealed have to be propagated

```
sealed interface Shape {  
    non-sealed class Circular implements Shape {}  
    sealed class Cornered implements Shape {}  
    final class Rectangle implements Cornered {}  
    record Square(int h) implements Cornered {}  
}
```

Pattern Matching

```
case LOTTO_NUM:
    ticket = lottoGameManager.getTicket();
    break;
case LOTTO_SYSTEM:
    ticket = lottoGameManager.getTicket();
    break;
case LOTTO_PORTION:
    ticket = lottoGameManager.getTicket();
    break;
case LOTTO_SUPERDING:
    ticket = lottoGameManager.getTicket();
    break;
case LOTTO_JACKPOT:
```

JEP 394

Pattern Matching for instanceof landed in Java 16

```
if (o instanceof Triangle t) {  
    System.out.println("Triangle with area: "  
        + t.calculateArea());  
} else {  
    System.out.println("Not a triangle);  
}
```

JEP 394

Mixing of patterns and operators possible

```
if (o instanceof Triangle t) {
    System.out.println("Area: " + t.calculateArea());
} else if (!(o instanceof String str)) {
    System.out.println("Not Triangle or String ");
} else {
    System.out.println("String value is:" + str);
}
```

JEP 427

Pattern Matching for switch

3rd Preview in Java 19

```
switch (s) {  
    case Triangle t -> System.out.println("Triangle");  
    case Square s -> System.out.println("Square");  
    default -> System.out.println("Something");  
}
```

JEP 427

Guarded Patterns with when

```
switch (s) {  
  case Triangle t when t.calculateArea() > 100 ->  
    System.out.println("Large");  
  case Triangle t -> System.out.println("Small");  
  default -> System.out.println("Non-triangle");  
}
```

JEP 405

Record Patterns and Array Patterns

1st Preview in Java 19

```
record Point(int x, int y) {}

void printSum(Object o) {
    if (o instanceof Point(int x, var y)) {
        System.out.println(x+y);
    }
}
```


From the Dreams



JEP 302

Lambda Leftovers no target, yet

```
BiFunction<Integer, String, String> f  
    = (i, _) -> String.valueOf(i);
```

Concise Method Bodies

```
class User {  
    private final String name;  
    Integer nameLength() = name::length;  
}
```

String Template

Jim Laskey and Brian Goetz Sep. 2012

String Tapas Redux

```
int x = 10, y = 20;  
TemplatedString s = "{x} + {y} = {x + y}";  
    // Concatenation: 10 + 20 = 30
```

Contact

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Jobs



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