

Dart Programming - Runes

Strings are a sequence of characters. Dart represents strings as a sequence of Unicode UTF-16 code units. Unicode is a format that defines a unique numeric value for each letter, digit, and symbol.

Since a Dart string is a sequence of UTF-16 code units, 32-bit Unicode values within a string are represented using a special syntax. A **rune** is an integer representing a Unicode code point.

The String class in the **dart:core** library provides mechanisms to access **runes**. String code units / runes can be accessed in three ways –

- Using String.codeUnitAt() function
- Using String.codeUnits property
- Using String.runes property

String.codeUnitAt() Function

Code units in a string can be accessed through their indexes. Returns the 16-bit UTF-16 code unit at the given index.

Syntax

```
String.codeUnitAt(int index);
```

Example

```
import 'dart:core';  
void main(){  
  f1();  
}  
f1() {  
  String x = 'Runes';  
  print(x.codeUnitAt(0));  
}
```

[Live Demo](#)

It will produce the following **output** –

```
82
```

String.codeUnits Property

This property returns an unmodifiable list of the UTF-16 code units of the specified string.

Syntax

```
String. codeUnits;
```

Example

[Live Demo](#)

```
import 'dart:core';
void main(){
  f1();
}
f1() {
  String x = 'Runes';
  print(x.codeUnits);
}
```

It will produce the following **output** –

```
[82, 117, 110, 101, 115]
```

String.runes Property

This property returns an iterable of Unicode code-points of this **string.Runes** extends iterable.

Syntax

```
String.runes
```

Example

```
void main(){
  "A string".runes.forEach((int rune) {
    var character=new String.fromCharCode(rune);
    print(character);
  });
}
```

[Live Demo](#)

It will produce the following **output** –

```
A
s
t
r
i
n
g
```

Unicode code points are usually expressed as **\uXXXX**, where XXXX is a 4-digit hexadecimal value. To specify more or less than 4 hex digits, place the value in curly brackets. One can use the constructor of the Runes class in the dart:core library for the same.

Example

```
main() {
  Runes input = new Runes(' \u{1f605} ');
  print(new String.fromCharCodeCodes(input));
}
```

[Live Demo](#)

It will produce the following **output** –

