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Rust cheatlist

Cargo

- cargo new project_name: Initializes a new Rust project named *project_name* in the current directory.
- cargo build: Build program without optimizations. Output is stored in ./target/debug.
- cargo build —release: Build program with runtime optimizations. Output is stored in ./target/release.

Data types

- Scalar types:
 - ∘ Integer: Internally represented in 2-components notation when signed (- $(2^n) \rightarrow 2^n$ -1)

Length	Signed	Unsigned
8-bit	i8	u8
16-bit	i16	u16
32-bit	i32	u32
64-bit	i64	u64
128-bit	i128	u128
arch	isize	usize

- Floating point: f32, f64
- Boolean: bool
- Character: char
- Compound types
- Tuple: Fixed size (defined at declaration), elements may differ in type
 - \circ let tup: (i32, f64, u8) = (500, 6.4, 1);
 - \circ Values can be retrieved by either pattern matching: let (x, y, z) = tup; // x, y and z are now accessible as variables or by using a period let x = tup.0;
 - Array: Fixed size, elements should be of the same type
 - \circ let a = [1, 2, 3];
 - \circ let a: [f64; 3] = [1.0, 2.0, 3.0];
 - ∘ let a = [0; 5];: Creates an array of size 5 with all elements initialized to 0
 - o let first = a[0];: Accessing elements of array
 - o for element in a.iter() { ... }: Iterates over elements in array
 - Rust panics on index out of bounds situations

Variables

- let foo = bar;: Creates immutable variable foo and assigns it value bar.
- let mut foo = bar;: Creates mutable variable foo and assigns it value bar.
- let foo: type = false;: Creates immutable variable foo% with explicit type definition.

Functions

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- fn function name() { ... }
- fn function_name(x: i32, y: char) { ... }: Parameterized function
- fn function_name(x: i32) → i32 { ... }: Function with return value. Returned value is last evaluated expression of the function body.

Terminology

- Associated function: function implemented on a type rather than on a particular instance of the type. Similar as a *static method* in Java.
- Destructing: splitting a tuple in individual parts by pattern matching
- Expression: instructions that evaluate to a resulting value. No semicolon at end of line!
- Macro:
- Prelude:
- Statement: instructions that do not return a value
- Trait:

Syntax

- &var: Passes var as a reference. Allows a function to access a variable without the need to copy it to the function's stack.
- &mut var: Passes var as a mutable reference. Allows a function to access and alter the variable's value.

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