

Crate | chrono

■ chrono

- ◆ The ***chrono*** crate is for working with dates and times
- ◆ Supports:
 - Timezones
 - Time & date calculations
 - Parsing date strings
 - Formatting dates & times
- ◆ Errs on the side of caution: ambiguous date and time manipulations will return ***None***
 - Accurate, but slightly cumbersome to use in some cases

Prelude

```
use chrono::prelude::*;
```

■ Current Time

```
let utc = Utc::now();  
let local = Local::now();
```

■ Specific Time Zone



```
// EST is UTC-5
```

```
let est = FixedOffset::west(5 * 3600)
    .ymd(2021, 05, 16)
    .and_hms(13, 45, 0);
println!("{}", est);
```

```
2021-05-16 13:45:00 -05:00
```

■ Converting Between Time Zones

```
let est = FixedOffset::west(5 * 3600)
    .ymd(2021, 05, 16)
    .and_hms(13, 45, 0);
```

```
let utc = est.with_timezone(&Utc);
```

```
let utc: DateTime<Utc> = est.into();
```

```
let est_tz = FixedOffset::west(5 * 3600);
```

```
let est = utc.with_timezone(&est_tz);
```

■ Duration

```
use chrono::Duration;  
let now = Utc::now();  
let an_hour = Duration::hours(1);  
let when = now + an_hour;  
println!("          now: {}", now);  
println!("in an hour: {}", when);
```

```
          now: 2021-05-27 03:01:01.713282168 UTC  
in an hour: 2021-05-27 04:01:01.713282168 UTC
```

■ Duration

```
use chrono::Duration;  
let now = Utc::now();  
let an_hour = Duration::hours(1);  
let when = now + an_hour;  
let duration = when - now;  
println!("duration: {}", duration.num_hours());
```

```
duration: 1
```


■ Parsing

```
let date_str = "2020-08-23T10:00:00Z";  
let dt = date_str.parse::
```

```
let date_str = "2020-08-23T10:00:00 +03:00";  
let fmt_str = "%Y-%m-%d %H:%M:%S %z";  
let dt = DateTime::parse_from_str(date_str, fmt_str);
```

```
let date_str = "2020-08-23 10:00:00";  
let fmt_str = "%Y-%m-%d %H:%M:%S";  
let dt = Utc.datetime_from_str(date_str, fmt_str);
```

■ Formatting

```
let date = Local::now();  
let fmt_str = "%Y-%m-%d %H:%M:%S";  
println!("{}", date.format(fmt_str));
```

2021-05-26 20:35:43

■ Recap

- ◆ *chrono* provides time and date functionality
- ◆ *.into()* can be used to convert between time zones
- ◆ Dates can be added or subtracted together to retrieve the duration between the dates
- ◆ New dates can be generated by adding or subtracting durations
- ◆ Parsing and formatting uses the *parse_from_str()* and *format()* functions, respectively
 - Full list of format specifiers are in the documentation