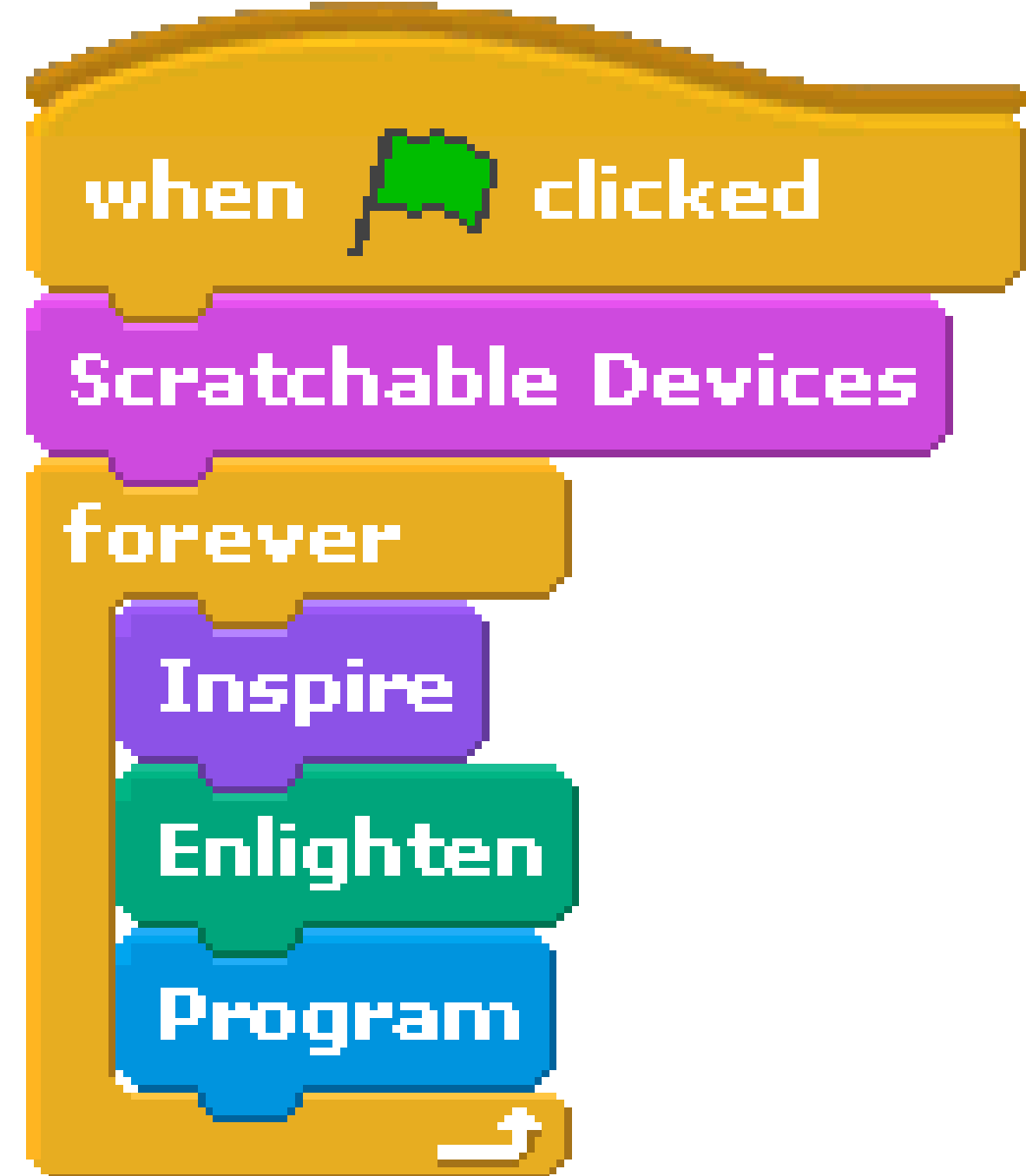


Scratchable Devices

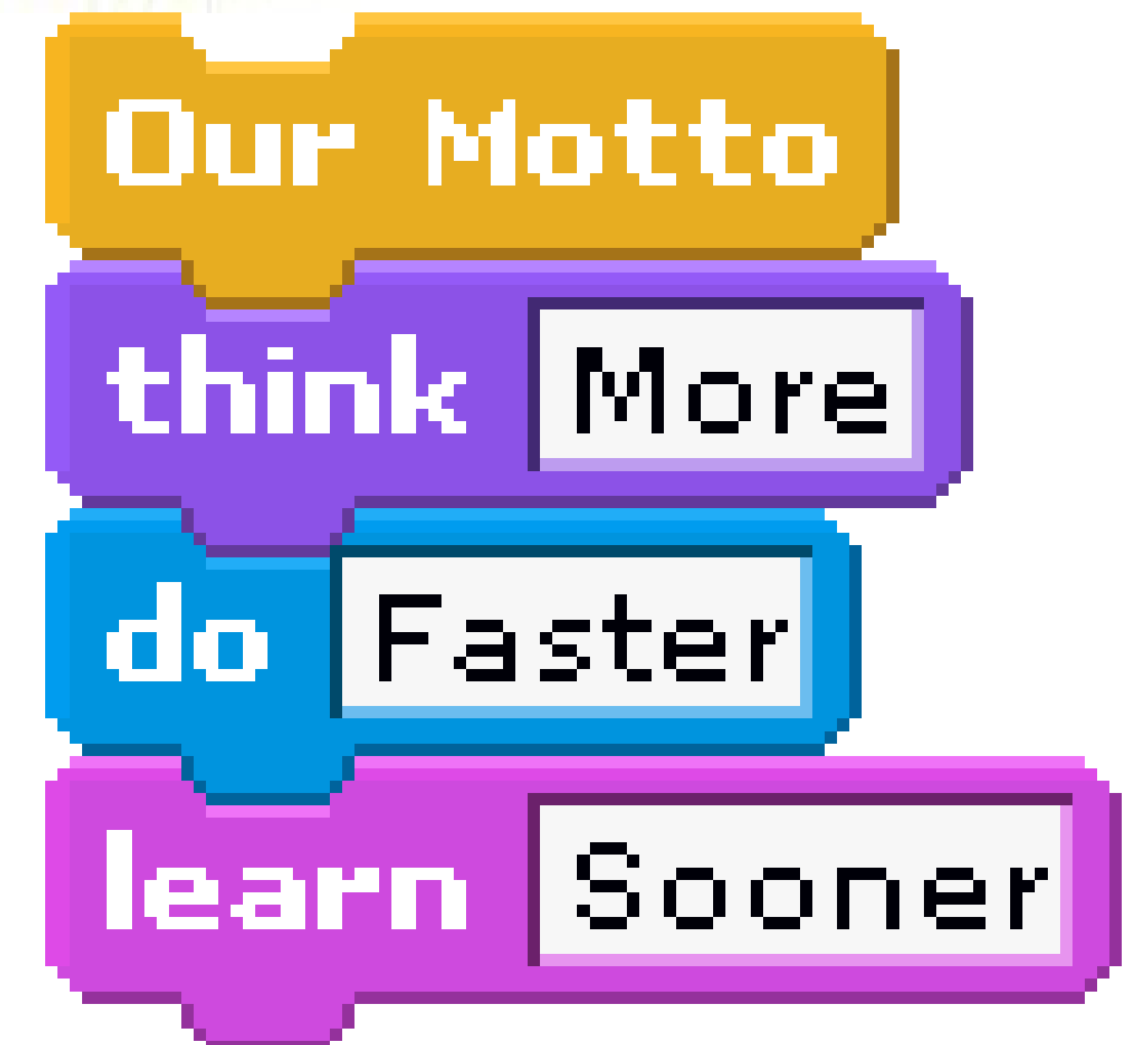


By: Jordan Ash, Monica Babes, Gal Cohen, Sameen Jalal, Michael Littman, Luis Piloto, Phillip Quiza, Blase Ur
 With: Matt Continisio, Steven Fisher, Sam Lichtenberg, Vukosi Marivate, Amanda Rumsey, Raheem Scott- Griffith, Emily Zhang



Giving Everyone A Reason To Program

We are seeking to create useful devices that will serve as motivation for people to gain familiarity with programming. We took everyday household appliances and connected them to BYOB, an extension of Scratch, so that they can do much more than originally intended.



More

Our programming-based interface allows end users to do **MORE** than they can with a standard button-style interface

```

    forever if CoffeePower = On
        wait 60 * 5 secs
        play sound Java Jive!
    
```

Faster

End users should be able to accomplish the same tasks with the traditional interface, only **FASTER**

Set time the conventional way:
 Press "hour" button 23 times - Extra 12 to set the AM/PM
 Press "minutes" button 59 times

To set time from 1:00 to 12:59 using Scratchable Devices:

```

    Set AM/PM AM
    Set alarm time to Hour: 12 Minute: 59
    
```

Sooner

People will be able to learn to do new tasks **SOONER** because the programming interface is the same across devices

```

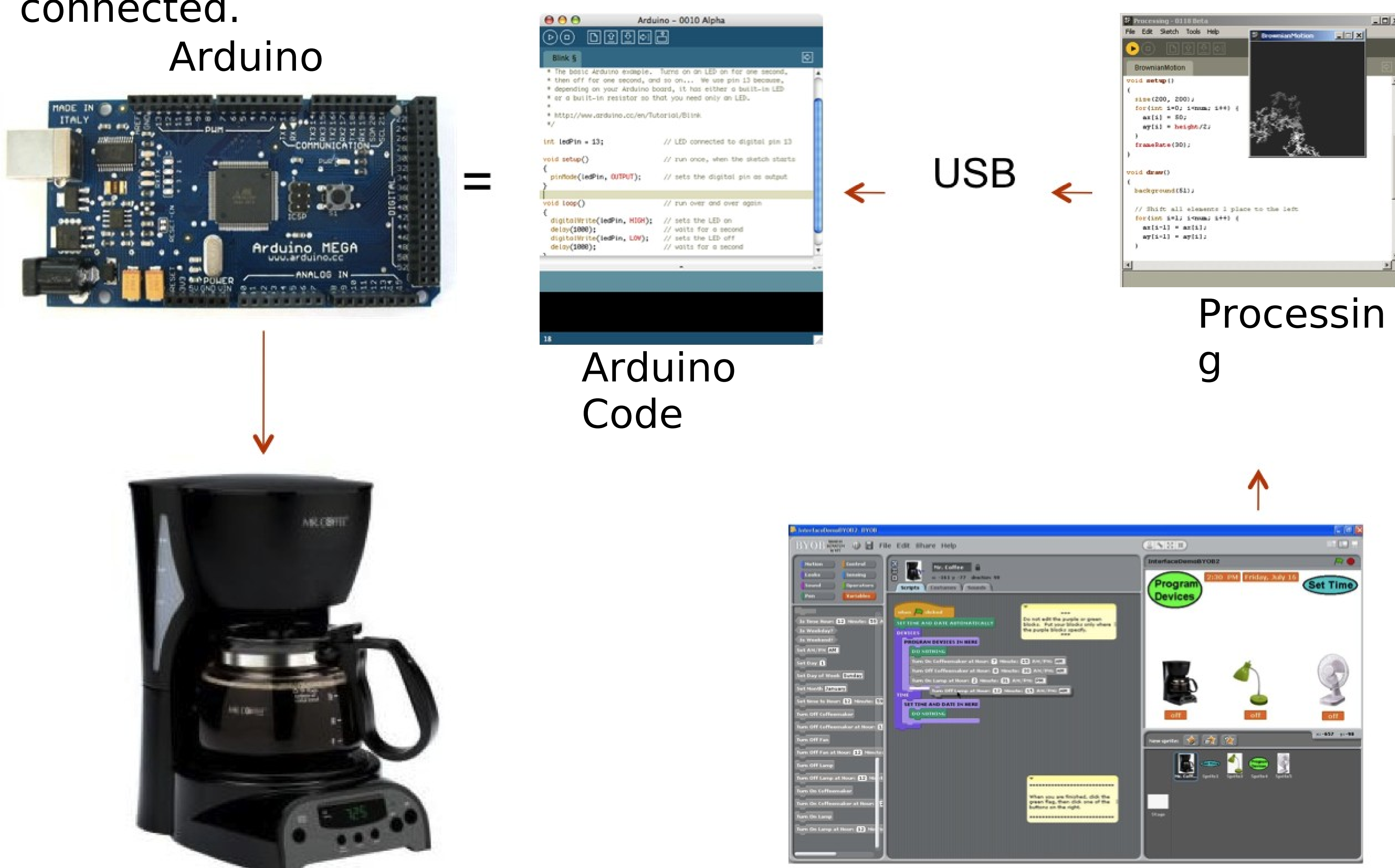
    if FanPower = On
        wait 60 * 20 secs
        Turn Off Fan
    
```

```

    if CoffeePower = Off
        wait 60 * 20 secs
        Turn On Coffeemaker
    
```

How Is This Possible?

We are using an Arduino, a microcontroller, to communicate between BYOB and the physical devices. From BYOB, a command is interpreted in Processing and shuttled to the Arduino. The instruction then controls the Scratchable Device by sending electrical signals to specific ports to which the devices are connected.



```

    if AlarmPower = On
        if Is Weekday?
            Turn On Coffeemaker
        else
            do nothing, it's a weekend!
    
```

Have coffee brewing as you get out of bed!

```

    Turn Off Lamp at Hour: 12 Minute: 59 AM/PM: AM
    Turn Off Fan at Hour: 12 Minute: 59 AM/PM: AM
    
```

Don't waste away electricity by running your fan or Lamp through the night.

Transform any ordinary lamp into a clapper!

```

    forever if loud?
        if LampPower = Off
            Turn On Lamp
        else
            Turn Off Lamp
    
```



Conclusion and Future Plans

In daily life, there is no need for programming knowledge. Our project helps provide new motivation for people to use programming. To evaluate whether our interface allows people to do more, faster and sooner with devices, we will conduct a user study that compares our approach with traditional styles. Subjects will program simple tasks using both Scratchable Devices and normal devices. The feedback from this study will help us target future interface designs.

```

    if CoffeePower = On
        Turn On Fan
        wait 60 secs
        Turn Off Fan
    
```

Don't like your coffee smolderingly hot? Cool it down for a minute.