



Autonomous Programming

Cougar Robotics Team



What is Autonomous?

- 30-40 seconds
- Beginning of the Round
- Pre-Programmed
- Robot moves without human interaction
- Underrated by many teams

Things to think about...

- Offense / Defense
- Scoring Points
- Positioning yourself for TeleOp
- Having pre-programmed options for many situations/ strategies
- Complement your alliance partner

Mission Design

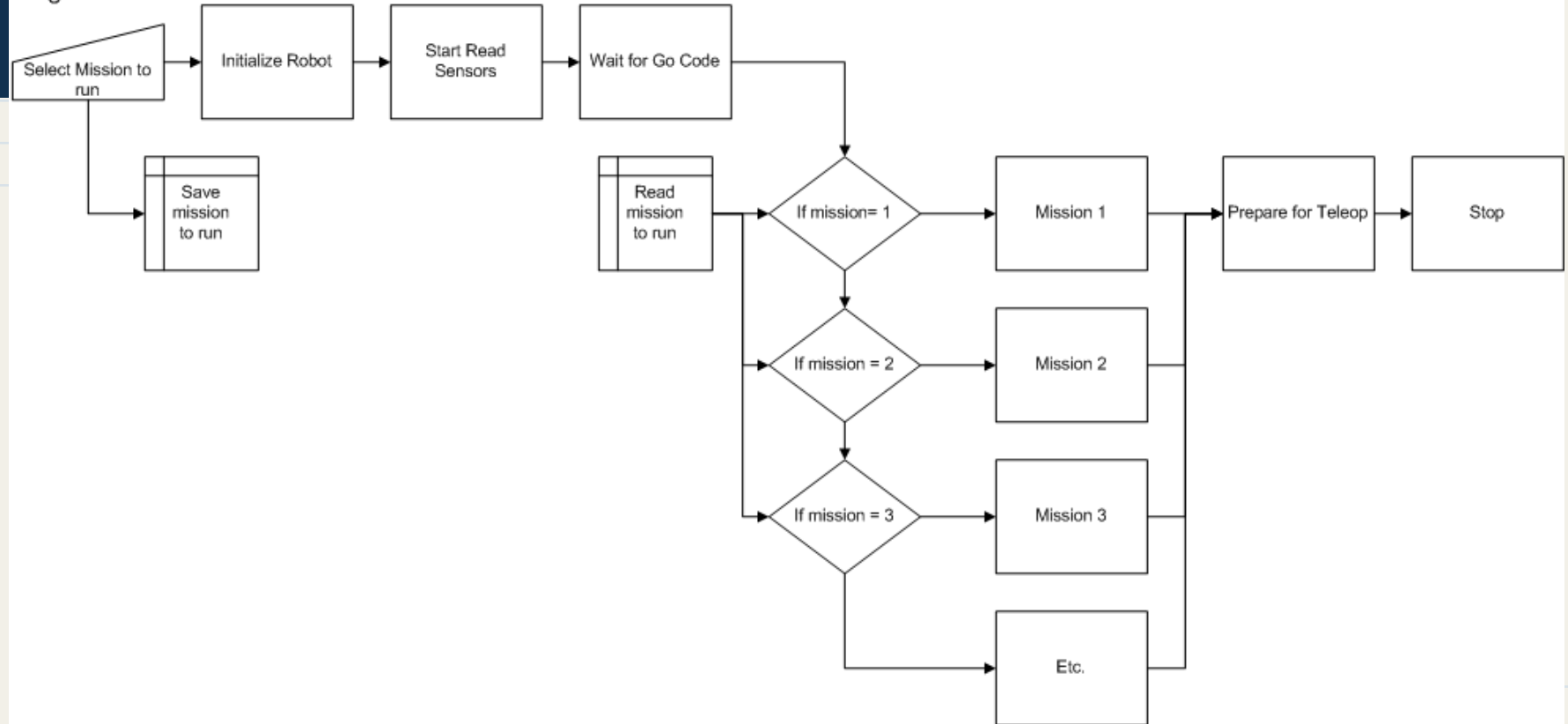
- Reliability
- Time
- Dealing with Traffic
- Multiple Starting Locations
- Different Scenarios

Programming Principles

- Best Practices
 - Reusable Routines
 - Clean code
 - comments
 - location
 - spacing/indentation
- Debugging info Displayed to Screen

Flow Chart

Program Flow



Reusable Routines



Modularization

- This is important enough to deserve it's own slide...
- Reusable Routines
 - Make it user-friendly
 - Spend time to save time
 - Make them usable in different situations (parameters)

```
void turnRightWheel(float targetHeading)
{
    float diff;
    float gain = 2;
    int correction;
    int tmpSign;
    diff = targetHeading - heading;
    while (abs(diff) > 1)
    {
        diff = targetHeading - heading;
        correction = diff * gain;
        tmpSign = sgn(correction);
        correction = abs(correction);
        if(correction < 30)
        {
            correction = 30;
        }
        else if(correction > 100)
        {
            correction = 100;
        }
        correction = tmpSign * correction;
        motor[motorLeft] = 0;
        motor[motorRight] = - correction;
    }
    motor[motorLeft] = 0;
    motor[motorRight] = 0;
}
```