


Methods:

Lessons from Apollo 13

Video

Watch the video, answer this **special bonus question**:
One of the actors in this clip is a prominent person in a sports related movie. Name the sports movie.
Hint: He has a distinct voice.

What we can learn from Apollo 13?

- BOOSTER
 - CAPCOM
 - EECOM
 - FIDO
 - FAO
 - NETWORK
 - RECOVERY
 - RETRO
 - CONTROL
 - FLIGHT
 - SURGEON
 - PAO
 - GUIDANCE
 - GNC
 - INCO
 - TELMU
- 

Standard Interfaces



Dice Rolling Program

- 3 dice, score is sum of dice
- Change score to $1*\text{die1} + 2*\text{die2} + 3*\text{die3}$
- Display score in red if below 18, blue if above
- Display words for dice values instead of numbers



Methods:

Doing something more than once

- Simple method **declaration syntax**:

```
private void <identifier>()  
{  
    <statements>  
}
```

a.k.a Functions, subroutines, subprograms

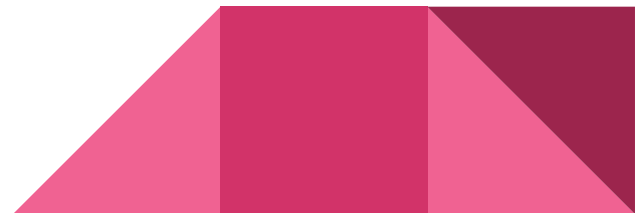


Methods:

Doing something more than once

- Method **call syntax**:

<identifier>();



Example 1

```
private void AddBonus()  
{  
    score += 25;  
    textScore.Text = "Score: "+ score;  
    textMessage.Text = "Bonus!";  
}
```

```
dice1 = random.Next(1,7);  
if (dice1 == dice2 &&  
    dice2 == dice3)  
{  
    AddBonus();  
}
```



Example 2

```
private void EndGame()  
{  
    buttonGuess.IsEnabled = false;  
    textMessage.Text = "Game Over!";  
}
```

```
rollsLeft --;  
if (rollsLeft == 0)  
{  
    EndGame();  
}
```



Rules for Method Names - Syntax

- Naming **Syntax** (will cause errors if you don't follow)
 - Identifiers can contain letters, numbers, and underscore (_)
 - Can't start with a number or contain spaces or special characters
 - Case matters! (MyMethod is not the same as mymethod)



Rules for Method Names - Convention

- **Naming Convention** (will cause confusion if you don't follow)
 - Name should indicate what the method is doing (meaningful—start with a verb)
 - **“PascalCase”**: start with capital letter, then each subsequent word starts with a capital letter (C#)



Methods are like mini-programs (input → processing → output)

- Complete method **declaration syntax**:

```
private <return type> <identifier> (<optional parameter list>)  
{  
    <statements>  
}
```



Methods are like mini-programs (input → processing → output)

- Method **call syntax**:

<identifier>(<argument list>);



Example 3

```
private int CalculateArea(int length, int width)
{
    int area = length * width;
    return area;
}

int side1 = 5;
int side2 = 7;
area = CalculateArea(side1, side2);

int area = CalculateArea(5, 7);
```



Example 4

```
private int ConvertToCelsius(int fahrenheit)
{
    return (fahrenheit - 32) * 5 / 9;
}
```

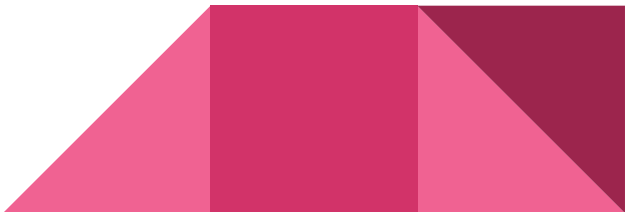
```
celsius = ConvertToCelsius(32);
```



Example 5

```
private bool AreSame(int d1, int d2, int d3, int d4)
{
    if (d1 == d2 && d2 == d3 && d3 == d4)
    {
        return true;
    }
    return false;
}
```

```
if (AreSame(2, 3, 2, 3))
{
    AddBonus();
}
```



The End

