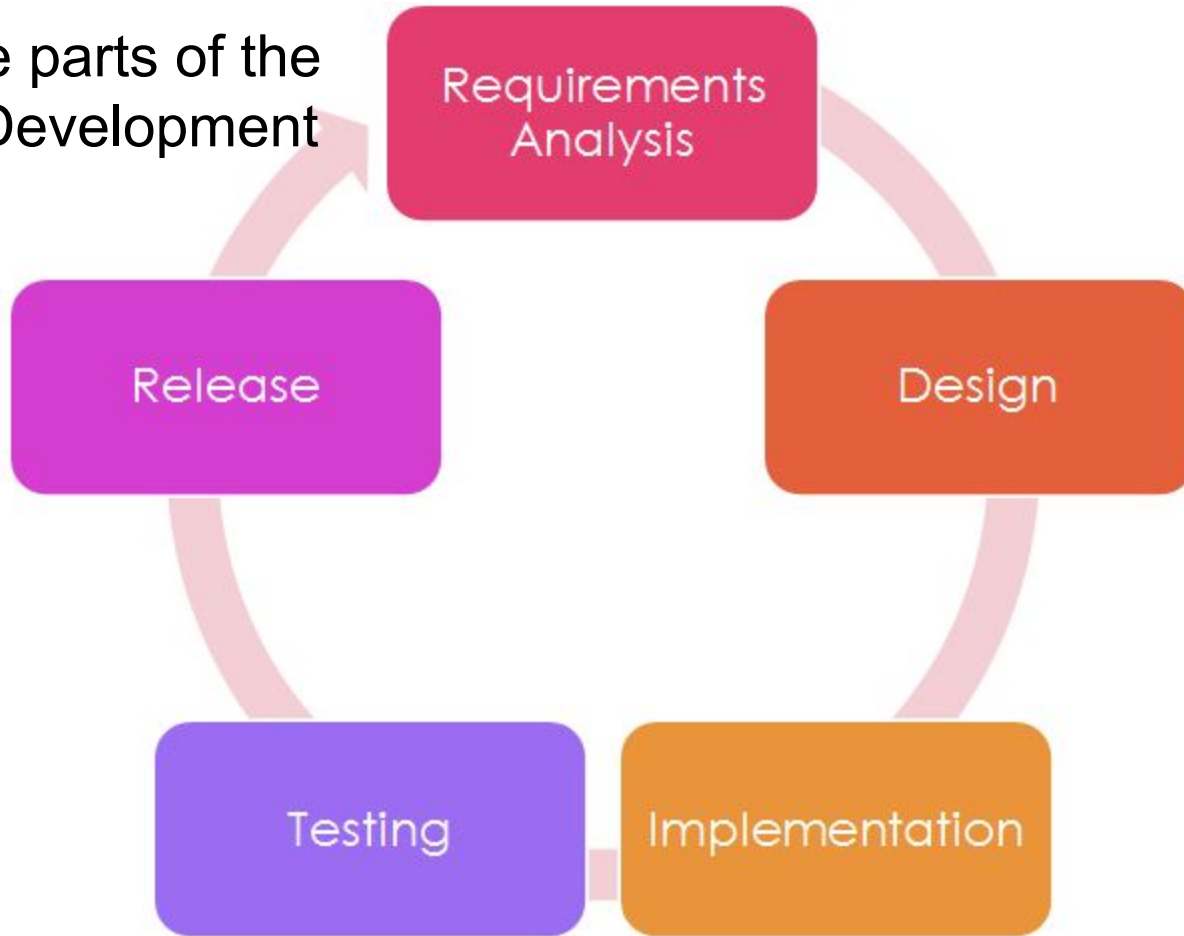# Test 3 Review

Topics for the Test

- Expressions (variables and operators)
- Program
- Branching
- Methods
- Binary numbers
- Looping
- Software Development Lifecycle

Identify the parts of the Software Development Lifecycle

Problem 1

```
string output = "[";
int i = 0;

while (i < 5)
{
    i++;
    output = output + " " + i;
}
output = output + " ]";
```

Problem 2

```
string output = "[";

for (int i = 0; i <= 5; i++)
{
    output = output + " " + i;
}
output = output + " ]";
```

Problem 3

```
int sum = 3;
int i = 2;

do
{
   sum = sum + (i * 4);
   i++;
} while (i < 8);
```

Expressions

int answer = 42;   int score = 10;   int cost = 7;   string name = "Paul";

Expression	Type	Value
"hello " + name	_____	_____
score == 8	_____	_____
cost != 8	_____	_____
answer > 15	_____	_____
cost > 5 && cost < 10	_____	_____
score == 4 || cost == 7	_____	_____

Expressions

int answer = 42;   int score = 10;   int cost = 7;   string name = "Paul";

Expression	Type	Value
answer + 5	_____	_____
13	_____	_____
score – cost	_____	_____
answer * score	_____	_____
7 / 3	_____	_____
7 % 3	_____	_____

Branching

```
string s = "letters: ";
if (x < y)
{
  if (x > 5)
  {
    s += "A";
  }
  else if (y > 5)
  {
    s += "B";
  }
  else
  {
    s += "C";
  }
}
```

```
else
{
  if (x > 5)
  {
    s += "D";
  }
  if (y > 5)
  {
    s += "E";
  }
  else
  {
    s += "F";
  }
}
```

x = 10, y = 20

x = 20, y = 10

Methods

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

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

What is answer?

```
int side1 = 10;
int side2 = 20;
int ans2 = CalculateArea(side1, side2);
```

What is ans2?

Methods

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

int celsius = ConvertToCelsius(32);

What is celsius?

Methods

```
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();
}
```

Looping Problem 1 - While

```
string output = "[";
int i = 0;

while (i < 5)
{
    i++;
    output = output + " " + i;
}
output = output + " ]";
```

Looping Problem 2 - For

```
string output = "[";

for (int i = 0; i <= 5; i++)
{
    output = output + " " + i;
}
output = output + " ]";
```

Looping Problem 3 - Do-While

```
string output = "[";
int i = 0;

do
{
    output = output + " " + i;
    i++;
} while (i < 5);
output = output + " ]";
```

Binary Numbers - Convert Binary to Decimal

11011

00111

01000

10110

Binary Numbers - Convert Decimal to Binary

21

72

100

6