

A decorative graphic on the left side of the slide, consisting of a network of white lines and small circles on a blue gradient background, resembling a circuit board or neural network.

# POLYNOMIAL FUNCTION CLASS

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# POLYNOMIAL FUNCTION

- $F(x)=4x^4+0x^3+2x^2+1x+2$
- A polynomial function represents a series of monomials
- Each monomial consists of a degree and coefficient
- Polynomial functions can also be used to generate values by substituting in a value for  $x$

# INTERNAL REPRESENTATION

- The power of each monomial are represented by their index in a vector of integers
- Each of the coefficients for each of the monomials is stored in the location that is indexed by the degree of the monomial
- If the polynomial function has a nonexistent term then it's coefficient is therefore zero

# CONSTRUCTORS AND ASSIGNMENT

```
//This initializes the polynomial function to a default value of 0
```

```
PolynomialFunction function1();
```

```
//This functions shows the constructor for an array
```

```
PolynomialFunction function2({1, 2, 3}, 3);
```

```
//This demonstrates the copy constructor that sets function1 equal to function2
```

```
function1 = function2;
```

```
//There is a third constructor that also takes a vector of integers to represent the  
//coefficients
```

# EQUALITY AND ORDERING

//This operation returns true if both of the coefficient vectors are equal to  
//each other

`function1 == function2`

//This operation returns true if the functions are not equal to each other

`function1 != function2`

# ARITHMETIC OPERATIONS

//adds the two functions together by adding the coefficients of corresponding  
//degrees together

$\text{function1} + \text{function2}$

//subtracts the two functions by subtracting the coefficients of corresponding  
//degrees

$\text{function1} - \text{function2}$

//Multiplication and division can also be done but were considered rather hard to  
//implement for the scope of this project