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**NAME**

Vector

**SYNOPSIS**

```
use Vector;

use Vector qw(:all);
```

**DESCRIPTION**

Vector class provides the following methods:

new, AddValues, Copy, GetLength, GetMagnitude, GetNumOfNonZeroValues, GetPercentOfNonZeroValues, GetSize, GetValue, GetValues, GetX, GetXYZ, GetY, GetZ, IsVector, Normalize, SetValue, SetValuePrintFormat, SetX, SetXYZ, SetY, SetZ, StringifyVector, IsVector

The following functions are available:

IsVector, SetValuePrintFormat UnitXVector, UnitYVector, UnitZVector, UnitVector, ZeroVector

The following operators are overloaded:

```
" " 0+ bool
@{}
+ - * / %
x .
== != < <= > >=
neg
abs exp log sqrt cos sin
```

**FUNCTIONS**

new

```
$NewVector = new Vector();
$NewVector = new Vector(@Values);
$NewVector = new Vector(\@Values);
$NewVector = new Vector($AnotherVector);
```

Creates a new Vector object containing *Values* and returns NewVector object. In case no *Values* are specified, an empty Vector is created.

AddValues

```
$Vector->AddValues(@Values);
$Vector->AddValues(\@Values);
$Vector->AddValues($AnotherVector);
```

Adds values to *Vector* using an array, reference to an array or another vector and returns *Vector*.

Copy

```
$NewVector = $Vector->Copy();
```

Creates a copy of *Vector* and returns *NewVector*.

GetLength

```
$Length = $Vector->GetLength();
```

Returns *Length* of a 3D *Vector* corresponding to its dot product.

GetMagnitude

```
$Length = $Vector->GetMagnitude();
```

Returns *Length* of a 3D *Vector* corresponding to its dot product.

GetNumOfNonZeroValues

```
$Value = $Vector->GetNumOfNonZeroValues();
```

Returns number of non-zero values in *Vector*.

GetPercentOfNonZeroValues

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```
$Value = $Vector->GetPercentOfNonZeroValues();
```

Returns percent of non-zero values in *Vector*.

#### GetSize

```
$Size = $Vector->GetSize();
```

Returns size of a *Vector* corresponding to number of its values.

#### GetValue

```
$Value = $Vector->GetValues($Index);
```

Returns vector Value specified using *Index* starting at 0.

#### GetValues

```
@Values = $Vector->GetValues();  
$ValuesRef = $Vector->GetValues();
```

Returns an array or a reference to an array containing all *Vector* values.

#### GetX

```
$X = $Vector->GetX();
```

Returns X value of a 3D *Vector*

#### GetXYZ

```
@XYZValues = $Vector->GetXYZ();  
$XYZValuesRef = $Vector->GetXYZ();
```

Returns XYZ values of a 3D *Vector* as an array or a reference to an array containing the values.

#### GetY

```
$Y = $Vector->GetY();
```

Returns Y value of a 3D *Vector*.

#### GetZ

```
$Z = $Vector->GetZ();
```

Returns Z value of a 3D *Vector*.

#### IsVector

```
$Status = Vector::IsVector($Object);
```

Returns 1 or 0 based on whether *Object* is a *Vector* object.

#### Normalize

```
$Vector->Normalize();
```

Normalizes a 3D *Vector* by dividing its values by the length and returns *Vector*.

#### SetValue

```
$Vector->SetValue($Index, $Value);
```

Sets a *Vector* value specified by *Index* to *Value* and returns *Vector*.

#### SetValuePrintFormat

```
$Vector->SetValuePrintFormat($ValuePrintFormat);  
Vector::SetValuePrintFormat($ValuePrintFormat);
```

Sets format for printing vector values for a specified *Vector* or the whole class. Default format: %g.

#### SetX

```
$Vector->SetX($Value);
```

Sets X value of a 3D vector to *Value* and returns *Vector*.

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**SetXYZ**

```
$Vector->SetXYZ(@Values);  
$Vector->SetXYZ(\@Values);  
$Vector->SetXYZ($AnotherVector);
```

Sets XYZ values of a 3D vector and returns *Vector*.

**SetY**

```
$Vector->SetY($Value);
```

Sets Y value of a 3D vector to *Value* and returns *Vector*.

**SetZ**

```
$Vector->SetZ($Value);
```

Sets Z value of a 3D vector to *Value* and returns *Vector*.

**StringifyVector**

```
$String = $Vector->StringifyVector();
```

Returns a string containing information about *Vector* object.

**UnitVector**

```
$UnitVector = UnitVector([$Size]);  
$UnitVector = Vector::UnitVector([$Size]);
```

Returns a UnitVector of *Size*. Default size: 3.

**UnitXVector**

```
$UnitXVector = UnitXVector();
```

Returns a 3D UnitXVector.

**UnitYVector**

```
$UnitYVector = UnitYVector();
```

Returns a 3D UnitYVector.

**UnitZVector**

```
$UnitZVector = UnitZVector();
```

Returns a 3D UnitZVector.

**ZeroVector**

```
$UnitVector = ZeroVector([$Size]);  
$UnitVector = Vector::ZeroVector([$Size]);
```

Returns a ZeroVector of *Size*. Default size: 3.

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**SEE ALSO**

BitVector.pm

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