

# IVS calculator

1.0

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# Chapter 1

## Namespace Index

### 1.1 Namespace List

Here is a list of all namespaces with brief descriptions:

<a href="#">controller</a>	9
<a href="#">eval_test</a>	11
<a href="#">math_lib</a>	11
<a href="#">math_test</a>	15
<a href="#">window</a>	15





## Chapter 2

# Hierarchical Index

### 2.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

TestCase	
eval_test.EvalTestCase . . . . .	21
eval_test.TestOperations . . . . .	28
eval_test.TestPmdas . . . . .	31
eval_test.TestBrackets . . . . .	24
math_test.TestAdd . . . . .	23
math_test.TestDivide . . . . .	25
math_test.TestFactorial . . . . .	26
math_test.TestMultiply . . . . .	27
math_test.TestPower . . . . .	32
math_test.TestSqrt . . . . .	33
math_test.TestSubtract . . . . .	34
controller.TipBubble . . . . .	35



## Chapter 3

# Class Index

### 3.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

<a href="#">eval_test.EvalTestCase</a>	21
<a href="#">math_test.TestAdd</a>	23
<a href="#">eval_test.TestBrackets</a>	24
<a href="#">math_test.TestDivide</a>	25
<a href="#">math_test.TestFactorial</a>	26
<a href="#">math_test.TestMultiply</a>	27
<a href="#">eval_test.TestOperations</a>	28
<a href="#">eval_test.TestPemdas</a>	31
<a href="#">math_test.TestPower</a>	32
<a href="#">math_test.TestSqrt</a>	33
<a href="#">math_test.TestSubtract</a>	34
<a href="#">controller.TipBubble</a>	35



## Chapter 4

# File Index

### 4.1 File List

Here is a list of all files with brief descriptions:

<a href="#">controller.py</a>	37
<a href="#">eval_test.py</a>	37
<a href="#">math_lib.py</a>	38
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<a href="#">window.py</a>	38



## Chapter 5

# Namespace Documentation

### 5.1 controller Namespace Reference

#### Classes

- class [TipBubble](#)

#### Functions

- def [button\\_click\\_handle](#) (event, entry\_widget)
- def [keyboard\\_input\\_handle](#) (event, entry\_widget)
- def [cat\\_click\\_handle](#) ()
- def [show\\_message\\_bubble](#) (event, widget, text)
- def [hide\\_message\\_bubble](#) (event, widget)

#### Variables

- bool [show\\_tip](#) = False
- [soundfile](#) = path.abspath(path.join(path.dirname(\_\_file\_\_), 'cat\_meow.wav'))

#### 5.1.1 Function Documentation

##### 5.1.1.1 [button\\_click\\_handle\(\)](#)

```
def controller.button_click_handle (
    event,
    entry_widget )

@brief Button click handler
@param entry_widget
@param event

@todo clear input after error
```

#### 5.1.1.2 `cat_click_handle()`

```
def controller.cat_click_handle ( )

@brief Cat button click handle. Plays meow sound
```

#### 5.1.1.3 `hide_message_bubble()`

```
def controller.hide_message_bubble (
    event,
    widget )

@brief displays empty tip message
@param event
@param widget root widget for the message text frame
```

#### 5.1.1.4 `keyboard_input_handle()`

```
def controller.keyboard_input_handle (
    event,
    entry_widget )

@brief Button click handler
@param entry_widget
@param event
```

#### 5.1.1.5 `show_message_bubble()`

```
def controller.show_message_bubble (
    event,
    widget,
    text )

@brief displays user tip messages
@param event
@param widget root widget for the message text frame
@param text text of the button that created event
```

### 5.1.2 Variable Documentation



### 5.1.2.1 show\_tip

```
def controller.show_tip ( ) = False
```

```
@brief Toggles user tip messages
```

### 5.1.2.2 soundfile

```
controller.soundfile = path.abspath(path.join(path.dirname(__file__), 'cat_meow.wav'))
```

## 5.2 eval\_test Namespace Reference

### Classes

- class [EvalTestCase](#)
- class [TestBrackets](#)
- class [TestOperations](#)
- class [TestPemdas](#)

## 5.3 math\_lib Namespace Reference

### Functions

- def [is\\_valid\\_type](#) (\*a)
- def [add](#) (a, b)
- def [subtract](#) (a, b)
- def [multiply](#) (a, b)
- def [divide](#) (a, b)
- def [factorial](#) (number)
- def [power](#) (number1, number2)
- def [sqrt](#) (number1, number2)
- def [precedence](#) (operator)
- def [apply\\_operator](#) (a, b, operator)
- def [get\\_operands](#) (operator, values\_stack)
- def [replace\\_negatives](#) (expression)
- def [evaluate\\_expression](#) (expression)

### 5.3.1 Function Documentation

#### 5.3.1.1 add()

```
def math_lib.add (
    a,
    b )

@brief Check the type of parameters and calculate their addition.
@param a Augend
@param b Addend
@return a + b The result of the addition of parameters a and b.
```

#### 5.3.1.2 apply\_operator()

```
def math_lib.apply_operator (
    a,
    b,
    operator )

@brief Apply operator on the input operands.
@param a Left input operand (on the left side of the operand).
@param b Right input operand.
@operator Input operator
@return operation Result of the operation with the input operands.

@cite Geeks for Geeks: Inspired by https://www.geeksforgeeks.org/expression-evaluation/
```

#### 5.3.1.3 divide()

```
def math_lib.divide (
    a,
    b )

@brief Check the type of parameters and calculate their division.
@param a Dividend
@param b Divisor
@return a / b The result of the division of parameters a and b.
```

#### 5.3.1.4 evaluate\_expression()

```
def math_lib.evaluate_expression (
    expression )

@brief Evaluate the input expression.
@param expression The input expression
@return values_stack[-1] Result of the evaluated expression, otherwise
@return None

@cite Geeks for Geeks: Inspired by https://www.geeksforgeeks.org/expression-evaluation/
```

#### 5.3.1.5 factorial()

```
def math_lib.factorial (
    number )

@brief Calculate the factorial of the input number.
@param number The input number.
@return result The factorial of input number.
```

#### 5.3.1.6 get\_operands()

```
def math_lib.get_operands (
    operator,
    values_stack )

@brief Get operands of the operation from stack.
@param operator The input operator.
@param values_stack The stack with the operands.
@operator Input operator
@return value1, value2 The left operand of the operation, otherwise
@return None

@cite Geeks for Geeks: Inspired by https://www.geeksforgeeks.org/expression-evaluation/
```

#### 5.3.1.7 is\_valid\_type()

```
def math_lib.is_valid_type (
    * a )

@brief Check the types of given parameters.
@param a One or more objects which type will be checked.
@return True If all the parameters are of type int or float, otherwise False.
```

#### 5.3.1.8 multiply()

```
def math_lib.multiply (
    a,
    b )

@brief Check the type of parameters and calculate their multiplication.
@param a Multiplicand
@param b Multiplier
@return a * b The result of the multiplication of parameters a and b.
```

#### 5.3.1.9 power()

```
def math_lib.power (
    number1,
    number2 )
```

Calculate the power of a number.

@param number1 The base number (the number being raised to a power).

@param number2 The exponent number (the power to which the base is raised).

@return 'number1' raised to the power of 'number2'.

#### 5.3.1.10 precedence()

```
def math_lib.precedence (
    operator )
```

@brief Evaluate precedence of the operator.

@param operator The operator of given expression.

@return number Evaluated operator precedence, where number in [0, 1, 2, 3]

@cite Geeks for Geeks: Inspired by <https://www.geeksforgeeks.org/expression-evaluation/>

#### 5.3.1.11 replace\_negatives()

```
def math_lib.replace_negatives (
    expression )
```

@brief Replace negative numbers with '0 - number'.

@param expression The input mathematical expression.

@return expression The edited mathematical expression.

#### 5.3.1.12 sqrt()

```
def math_lib.sqrt (
    number1,
    number2 )
```

@brief Calculates the nth root of a number

@param number1 Radicand

@param number2 Degree

@return 'number2' root of 'number1'

### 5.3.1.13 subtract()

```
def math_lib.subtract (
    a,
    b )

@brief Check the type of parameters and calculate their subtraction.
@param a Minuend
@param b Subtrahend
@return a - b The result of the subtraction of parameters a and b.
```

## 5.4 math\_test Namespace Reference

### Classes

- class [TestAdd](#)
- class [TestDivide](#)
- class [TestFactorial](#)
- class [TestMultiply](#)
- class [TestPower](#)
- class [TestSqrt](#)
- class [TestSubtract](#)

## 5.5 window Namespace Reference

### Variables

- [window](#) = `ttk.Window(themename='minty')`
- [style](#) = `ttk.Style()`
- [font](#)
- [foreground](#)
- [imagefile](#) = `path.abspath(path.join(path.dirname(__file__), 'cat.png'))`
- [image](#) = `tk.PhotoImage(file=imagefile)`
- list [number\\_buttons](#)
- list [operation\\_buttons](#)
- [entry](#) = `tk.Entry(master=window, font=('Helvetica', 32))`
- [top\\_buttons](#) = `ttk.Frame(master=window)`
- [bottom\\_buttons](#) = `ttk.Frame(master=window)`
- [brackets\\_frame](#) = `ttk.Frame(master=top\_buttons)`
- [clear\\_frame](#) = `ttk.Frame(master=top\_buttons)`
- [numbers\\_frame](#) = `ttk.Frame(master=bottom\_buttons)`
- [operation\\_frame](#) = `ttk.Frame(master=bottom\_buttons)`
- [padding\\_frame](#) = `ttk.Frame(master=operation\_frame, width=40)`
- [button](#) = `tk.Button(master=numbers\_frame, text=text, width=4,padding='15 15', style='secondary.TButton', command=controller.show\_tip)`
- [event](#)
- [widget](#)
- [text](#)
- [row](#)
- [column](#)

- `sticky`
- `weight`
- `clear_button` = `ttk.Button(master=clear_frame, text='C', width=4, padding='15 15', style='secondary.TButton')`
- `backspace_button` = `ttk.Button(master=clear_frame, text='←', width=4, padding='15 15', style='secondary.TButton')`
- `side`
- `lbracket_button` = `ttk.Button(master=brackets_frame, text='(', width=4, padding='15 15', style='secondary.TButton')`
- `rbracket_button` = `ttk.Button(master=brackets_frame, text=')', width=4, padding='15 15', style='secondary.TButton')`
- `expand`
- `True`
- `fill`
- `padx`
- `pady`
- `eval_button` = `ttk.Button(master=window, text='=', width=4, padding='15 15', style='secondary.TButton')`

## 5.5.1 Variable Documentation

### 5.5.1.1 backspace\_button

```
window.backspace_button = ttk.Button(master=clear_frame, text='←', width=4, padding='15 15',
style='secondary.TButton')
```

### 5.5.1.2 bottom\_buttons

```
window.bottom_buttons = ttk.Frame(master=window)
```

### 5.5.1.3 brackets\_frame

```
window.brackets_frame = ttk.Frame(master=top_buttons)
```

### 5.5.1.4 button

```
window.button = ttk.Button(master=numbers_frame, text=text, width=4, padding='15 15', style='secondary.TButton', command=controller.show_tip)
```

#### 5.5.1.5 clear\_button

```
window.clear_button = ttk.Button(master=clear_frame, text='C', width=4,padding='15 15', style='secondary.↵
TButton')
```

#### 5.5.1.6 clear\_frame

```
window.clear_frame = ttk.Frame(master=top_buttons)
```

#### 5.5.1.7 column

```
window.column
```

#### 5.5.1.8 entry

```
window.entry = tk.Entry(master=window, font=('Helvetica', 32))
```

#### 5.5.1.9 eval\_button

```
window.eval_button = ttk.Button(master=window, text='=', width=4,padding='15 15', style='secondary.↵
TButton')
```

#### 5.5.1.10 event

```
window.event
```

#### 5.5.1.11 expand

```
window.expand
```

#### 5.5.1.12 fill

```
window.fill
```

#### 5.5.1.13 font

```
window.font
```

#### 5.5.1.14 foreground

```
window.foreground
```

#### 5.5.1.15 image

```
window.image = tk.PhotoImage(file=imagefile)
```

#### 5.5.1.16 imagefile

```
window.imagefile = path.abspath(path.join(path.dirname(__file__), 'cat.png'))
```

#### 5.5.1.17 lbracket\_button

```
window.lbracket_button = ttk.Button(master=brackets_frame, text='(', width=4, padding='15 15',  
style='secondary.TButton')
```

#### 5.5.1.18 number\_buttons

```
list window.number_buttons
```

##### Initial value:

```
1 = [ ("7",0,0), ("8",0,1), ("9",0,2),  
2      ("4",1,0), ("5",1,1), ("6",1,2),  
3      ("1",2,0), ("2",2,1), ("3",2,2),  
4      ("0",3,0), (".",3,1), ("?",3,2)]
```



#### 5.5.1.19 numbers\_frame

```
window.numbers_frame = ttk.Frame(master=bottom_buttons)
```

#### 5.5.1.20 operation\_buttons

```
list window.operation_buttons
```

##### Initial value:

```
1 = [("/",0,1), ("*",1,1), ("-",2,1), ("+",3,1),  
2      ("!",0,2), ("^",1,2), ("√",2,2), ("cat",3,2)]
```

#### 5.5.1.21 operation\_frame

```
window.operation_frame = ttk.Frame(master=bottom_buttons)
```

#### 5.5.1.22 padding\_frame

```
window.padding_frame = ttk.Frame(master=operation_frame, width=40)
```

#### 5.5.1.23 padx

```
window.padx
```

#### 5.5.1.24 pady

```
window.pady
```

#### 5.5.1.25 rbracket\_button

```
window.rbracket_button = ttk.Button(master=brackets_frame, text=')', width=4, padding='15 15',  
style='secondary.TButton')
```

**5.5.1.26 row**

```
window.row
```

**5.5.1.27 side**

```
window.side
```

**5.5.1.28 sticky**

```
window.sticky
```

**5.5.1.29 style**

```
window.style = ttk.Style()
```

**5.5.1.30 text**

```
window.text
```

**5.5.1.31 top\_buttons**

```
window.top_buttons = ttk.Frame(master=window)
```

**5.5.1.32 True**

```
window.True
```

**5.5.1.33 weight**

```
window.weight
```

**5.5.1.34 widget**

```
window.widget
```

**5.5.1.35 window**

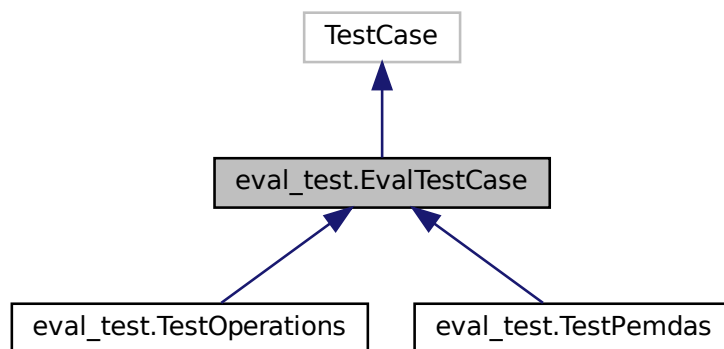
```
window.window = ttk.Window(themename='minty')
```

## Chapter 6

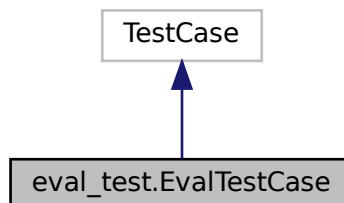
# Class Documentation

### 6.1 `eval_test.EvalTestCase` Class Reference

Inheritance diagram for `eval_test.EvalTestCase`:



Collaboration diagram for `eval_test.EvalTestCase`:



## Public Member Functions

- def [assertExprEquals](#) (self, expression, expected\_result)
- def [assertExprAlmostEquals](#) (self, expression, expected\_result)
- def [assertExprIsNone](#) (self, expression)

### 6.1.1 Member Function Documentation

#### 6.1.1.1 [assertExprAlmostEquals\(\)](#)

```
def eval_test.EvalTestCase.assertExprAlmostEquals (
    self,
    expression,
    expected_result )
```

#### 6.1.1.2 [assertExprEquals\(\)](#)

```
def eval_test.EvalTestCase.assertExprEquals (
    self,
    expression,
    expected_result )
```

#### 6.1.1.3 [assertExprIsNone\(\)](#)

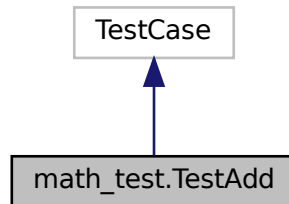
```
def eval_test.EvalTestCase.assertExprIsNone (
    self,
    expression )
```

The documentation for this class was generated from the following file:

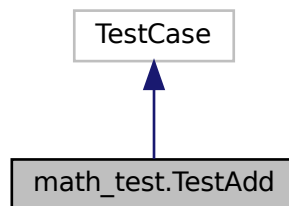
- [eval\\_test.py](#)

## 6.2 math\_test.TestAdd Class Reference

Inheritance diagram for math\_test.TestAdd:



Collaboration diagram for math\_test.TestAdd:



### Public Member Functions

- def `test_add` (self)
- def `test_add_float` (self)

### 6.2.1 Member Function Documentation

#### 6.2.1.1 test\_add()

```
def math_test.TestAdd.test_add (  
    self )
```

### 6.2.1.2 test\_add\_float()

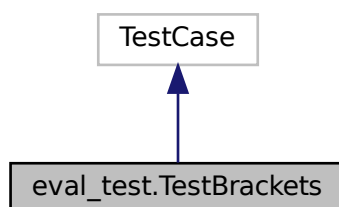
```
def math_test.TestAdd.test_add_float (
    self )
```

The documentation for this class was generated from the following file:

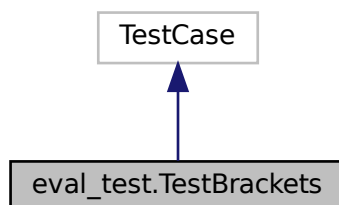
- [math\\_test.py](#)

## 6.3 eval\_test.TestBrackets Class Reference

Inheritance diagram for eval\_test.TestBrackets:



Collaboration diagram for eval\_test.TestBrackets:

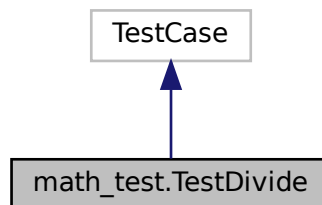


The documentation for this class was generated from the following file:

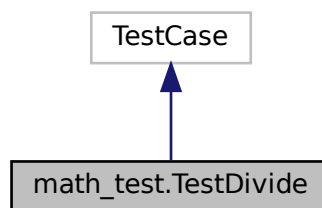
- [eval\\_test.py](#)

## 6.4 `math_test.TestDivide` Class Reference

Inheritance diagram for `math_test.TestDivide`:



Collaboration diagram for `math_test.TestDivide`:



### Public Member Functions

- def `test_divide` (self)
- def `test_divide_float` (self)

### 6.4.1 Member Function Documentation

#### 6.4.1.1 `test_divide()`

```
def math_test.TestDivide.test_divide (  
    self )
```

#### 6.4.1.2 test\_divide\_float()

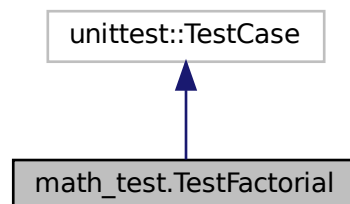
```
def math_test.TestDivide.test_divide_float (
    self )
```

The documentation for this class was generated from the following file:

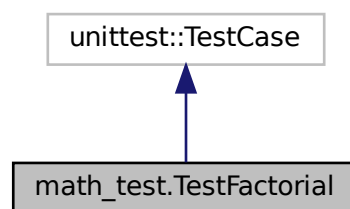
- [math\\_test.py](#)

### 6.5 math\_test.TestFactorial Class Reference

Inheritance diagram for math\_test.TestFactorial:



Collaboration diagram for math\_test.TestFactorial:



#### Public Member Functions

- def [test\\_factorial](#) (self)
- def [test\\_factorial\\_float](#) (self)



## 6.5.1 Member Function Documentation

### 6.5.1.1 test\_factorial()

```
def math_test.TestFactorial.test_factorial (
    self )
```

### 6.5.1.2 test\_factorial\_float()

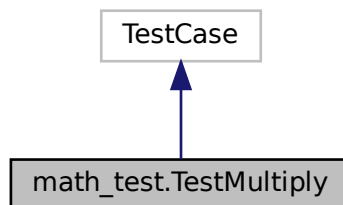
```
def math_test.TestFactorial.test_factorial_float (
    self )
```

The documentation for this class was generated from the following file:

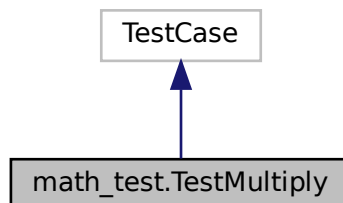
- [math\\_test.py](#)

## 6.6 math\_test.TestMultiply Class Reference

Inheritance diagram for math\_test.TestMultiply:



Collaboration diagram for math\_test.TestMultiply:



## Public Member Functions

- def [test\\_multiply](#) (self)
- def [test\\_multiply\\_float](#) (self)

### 6.6.1 Member Function Documentation

#### 6.6.1.1 test\_multiply()

```
def math_test.TestMultiply.test_multiply (  
    self )
```

#### 6.6.1.2 test\_multiply\_float()

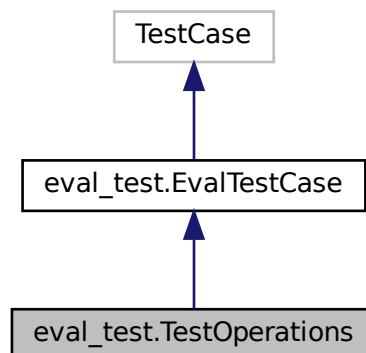
```
def math_test.TestMultiply.test_multiply_float (  
    self )
```

The documentation for this class was generated from the following file:

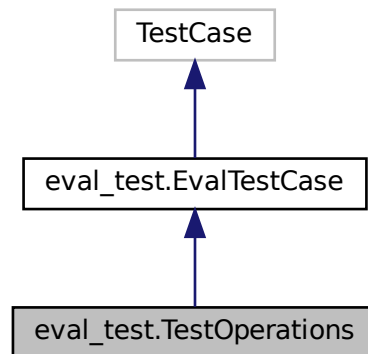
- [math\\_test.py](#)

## 6.7 eval\_test.TestOperations Class Reference

Inheritance diagram for eval\_test.TestOperations:



Collaboration diagram for eval\_test.TestOperations:



## Public Member Functions

- def [test\\_add](#) (self)
- def [test\\_add\\_float](#) (self)
- def [test\\_subtract](#) (self)
- def [test\\_subtract\\_float](#) (self)
- def [test\\_multiply](#) (self)
- def [test\\_multiply\\_float](#) (self)
- def [test\\_divide](#) (self)
- def [test\\_divide\\_float](#) (self)
- def [test\\_single\\_number](#) (self)

## 6.7.1 Member Function Documentation

### 6.7.1.1 test\_add()

```
def eval_test.TestOperations.test_add (  
    self )
```

### 6.7.1.2 test\_add\_float()

```
def eval_test.TestOperations.test_add_float (  
    self )
```

#### 6.7.1.3 test\_divide()

```
def eval_test.TestOperations.test_divide (
    self )
```

#### 6.7.1.4 test\_divide\_float()

```
def eval_test.TestOperations.test_divide_float (
    self )
```

#### 6.7.1.5 test\_multiply()

```
def eval_test.TestOperations.test_multiply (
    self )
```

#### 6.7.1.6 test\_multiply\_float()

```
def eval_test.TestOperations.test_multiply_float (
    self )
```

#### 6.7.1.7 test\_single\_number()

```
def eval_test.TestOperations.test_single_number (
    self )
```

#### 6.7.1.8 test\_subtract()

```
def eval_test.TestOperations.test_subtract (
    self )
```

#### 6.7.1.9 test\_subtract\_float()

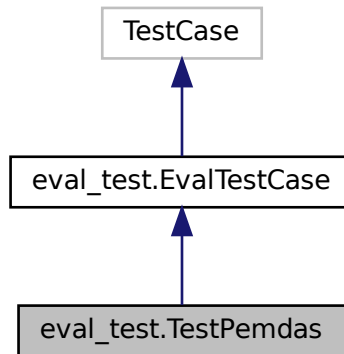
```
def eval_test.TestOperations.test_subtract_float (
    self )
```

The documentation for this class was generated from the following file:

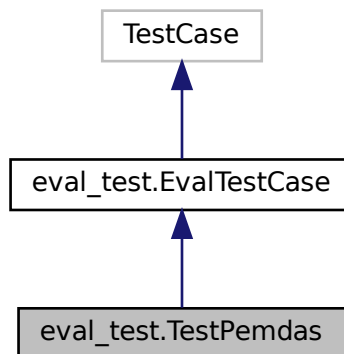
- [eval\\_test.py](#)

## 6.8 eval\_test.TestPmdas Class Reference

Inheritance diagram for eval\_test.TestPmdas:



Collaboration diagram for eval\_test.TestPmdas:



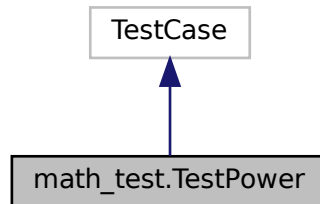
### Additional Inherited Members

The documentation for this class was generated from the following file:

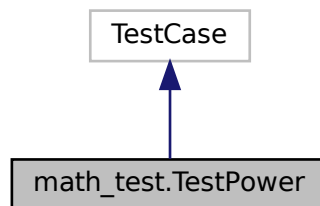
- [eval\\_test.py](#)

## 6.9 math\_test.TestPower Class Reference

Inheritance diagram for math\_test.TestPower:



Collaboration diagram for math\_test.TestPower:



### Public Member Functions

- def `test_power` (self)
- def `test_power_float` (self)

### 6.9.1 Member Function Documentation

#### 6.9.1.1 test\_power()

```
def math_test.TestPower.test_power (  
    self )
```

### 6.9.1.2 test\_power\_float()

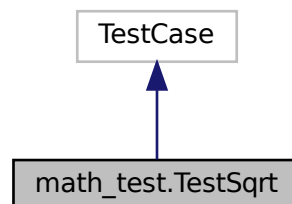
```
def math_test.TestPower.test_power_float (
    self )
```

The documentation for this class was generated from the following file:

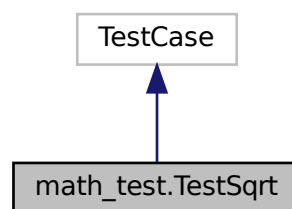
- [math\\_test.py](#)

## 6.10 math\_test.TestSqrt Class Reference

Inheritance diagram for math\_test.TestSqrt:



Collaboration diagram for math\_test.TestSqrt:



### Public Member Functions

- def [test\\_sqrt](#) (self)
- def [test\\_sqrt\\_float](#) (self)

## 6.10.1 Member Function Documentation

### 6.10.1.1 test\_sqrt()

```
def math_test.TestSqrt.test_sqrt (
    self )
```

### 6.10.1.2 test\_sqrt\_float()

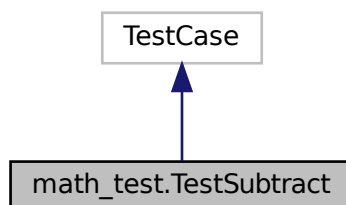
```
def math_test.TestSqrt.test_sqrt_float (
    self )
```

The documentation for this class was generated from the following file:

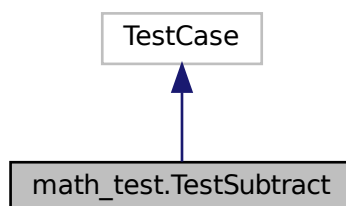
- [math\\_test.py](#)

## 6.11 math\_test.TestSubtract Class Reference

Inheritance diagram for math\_test.TestSubtract:



Collaboration diagram for math\_test.TestSubtract:





## Public Member Functions

- def [test\\_subtract](#) (self)
- def [test\\_subtract\\_float](#) (self)

### 6.11.1 Member Function Documentation

#### 6.11.1.1 [test\\_subtract\(\)](#)

```
def math_test.TestSubtract.test_subtract (
    self )
```

#### 6.11.1.2 [test\\_subtract\\_float\(\)](#)

```
def math_test.TestSubtract.test_subtract_float (
    self )
```

The documentation for this class was generated from the following file:

- [math\\_test.py](#)

## 6.12 controller.TipBubble Class Reference

### Public Member Functions

- def [\\_\\_init\\_\\_](#) (self, [widget](#), [message](#))
- def [show](#) (self)

### Public Attributes

- [widget](#)
- [message](#)
- [bubble\\_frame](#)
- [bubble\\_label](#)

#### 6.12.1 Detailed Description

@brief the TipBubble class creates a user tip popup

## 6.12.2 Constructor & Destructor Documentation

### 6.12.2.1 `__init__()`

```
def controller.TipBubble.__init__ (
    self,
    widget,
    message )

@brief Constructor for TipBubble class
@param widget master widget for text frame
@param message text of the popup
```

## 6.12.3 Member Function Documentation

### 6.12.3.1 `show()`

```
def controller.TipBubble.show (
    self )

@brief displays the message and packs the frame into root widget
```

## 6.12.4 Member Data Documentation

### 6.12.4.1 `bubble_frame`

```
controller.TipBubble.bubble_frame
```

### 6.12.4.2 `bubble_label`

```
controller.TipBubble.bubble_label
```

### 6.12.4.3 `message`

```
controller.TipBubble.message
```

### 6.12.4.4 `widget`

```
controller.TipBubble.widget
```

The documentation for this class was generated from the following file:

- [controller.py](#)

## Chapter 7

# File Documentation

### 7.1 controller.py File Reference

#### Classes

- class [controller.TipBubble](#)

#### Namespaces

- [controller](#)

#### Functions

- def [controller.button\\_click\\_handle](#) (event, entry\_widget)
- def [controller.keyboard\\_input\\_handle](#) (event, entry\_widget)
- def [controller.cat\\_click\\_handle](#) ()
- def [controller.show\\_message\\_bubble](#) (event, widget, text)
- def [controller.hide\\_message\\_bubble](#) (event, widget)

#### Variables

- bool [controller.show\\_tip](#) = False
- [controller.soundfile](#) = path.abspath(path.join(path.dirname(\_\_file\_\_), 'cat\_meow.wav'))

### 7.2 eval\_test.py File Reference

#### Classes

- class [eval\\_test.EvalTestCase](#)
- class [eval\\_test.TestOperations](#)
- class [eval\\_test.TestPmdas](#)
- class [eval\\_test.TestBrackets](#)

## Namespaces

- [eval\\_test](#)

## 7.3 math\_lib.py File Reference

### Namespaces

- [math\\_lib](#)

### Functions

- def [math\\_lib.is\\_valid\\_type](#) (\*a)
- def [math\\_lib.add](#) (a, b)
- def [math\\_lib.subtract](#) (a, b)
- def [math\\_lib.multiply](#) (a, b)
- def [math\\_lib.divide](#) (a, b)
- def [math\\_lib.factorial](#) (number)
- def [math\\_lib.power](#) (number1, number2)
- def [math\\_lib.sqrt](#) (number1, number2)
- def [math\\_lib.precedence](#) (operator)
- def [math\\_lib.apply\\_operator](#) (a, b, operator)
- def [math\\_lib.get\\_operands](#) (operator, values\_stack)
- def [math\\_lib.replace\\_negatives](#) (expression)
- def [math\\_lib.evaluate\\_expression](#) (expression)

## 7.4 math\_test.py File Reference

### Classes

- class [math\\_test.TestAdd](#)
- class [math\\_test.TestSubtract](#)
- class [math\\_test.TestMultiply](#)
- class [math\\_test.TestDivide](#)
- class [math\\_test.TestPower](#)
- class [math\\_test.TestSqrt](#)
- class [math\\_test.TestFactorial](#)

### Namespaces

- [math\\_test](#)

## 7.5 window.py File Reference

### Namespaces

- [window](#)

## Variables

- `window.window` = `ttk.Window(themename='minty')`
- `window.style` = `ttk.Style()`
- `window.font`
- `window.foreground`
- `window.imagefile` = `path.abspath(path.join(path.dirname(__file__), 'cat.png'))`
- `window.image` = `tk.PhotoImage(file=imagefile)`
- list `window.number_buttons`
- list `window.operation_buttons`
- `window.entry` = `tk.Entry(master=window, font=('Helvetica', 32))`
- `window.top_buttons` = `ttk.Frame(master=window)`
- `window.bottom_buttons` = `ttk.Frame(master=window)`
- `window.brackets_frame` = `ttk.Frame(master=top_buttons)`
- `window.clear_frame` = `ttk.Frame(master=top_buttons)`
- `window.numbers_frame` = `ttk.Frame(master=bottom_buttons)`
- `window.operation_frame` = `ttk.Frame(master=bottom_buttons)`
- `window.padding_frame` = `ttk.Frame(master=operation_frame, width=40)`
- `window.button` = `tk.Button(master=numbers_frame, text=text, width=4, padding='15 15', style='secondary.↵ TButton', command=controller.show_tip)`
- `window.event`
- `window.widget`
- `window.text`
- `window.row`
- `window.column`
- `window.sticky`
- `window.weight`
- `window.clear_button` = `tk.Button(master=clear_frame, text='C', width=4, padding='15 15', style='secondary.↵ TButton')`
- `window.backspace_button` = `tk.Button(master=clear_frame, text='←', width=4, padding='15 15', style='secondary.↵ TButton')`
- `window.side`
- `window.lbracket_button` = `tk.Button(master=brackets_frame, text='(', width=4, padding='15 15', style='secondary.↵ TButton')`
- `window.rbracket_button` = `tk.Button(master=brackets_frame, text=')', width=4, padding='15 15', style='secondary.↵ TButton')`
- `window.expand`
- `window.True`
- `window.fill`
- `window.padx`
- `window.pady`
- `window.eval_button` = `tk.Button(master=window, text='=', width=4, padding='15 15', style='secondary.T↵ Button')`



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