SimpleCalc

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SimpleCalc documentation

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This is the introduction about our project.

1.2 Authors

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Documentation for main.

Classes

- class CalcGridLayout

  custom kivy GUI layout class
- class CalculatorApp

  main application instance class

Functions

- def __init__ (self, kwargs)

  Creator method to setup Calculator instance overrides the class init method and sets input rules with boolean flags,.
- def dotpress (self)

  Method to check if dot printing is allowed.
- def numpress (self, num)

  Method to adjust flags when a number was pressed.
- def signpress (self, sign)

  Method to adjust flags when a sign was pressed.
- def oppress (self, op)

  Method to adjust flags when an operation was pressed.
- def trigpress (self, op)

  Method to adjust flags when a trigonometric function was pressed.
- def calculate (self, calculation)

  Result calculation method, uses 'mat_module' module.
- def delete (self)

  Character deleting method.
- def ac (self)

  All clean method.
- def build (self)

  Kivy method to build the GUI.
- def dochelp (self, args)

  Method to generate help popup.

Variables

- calc_inst = CalculatorApp()

    creates Calculator instance
- **op_allowed**
- **dot_allowed**
- **trig_allowed**
- **plus_allowed**
- **minus_allowed**
- **grid**
- **title**
- **icon**

6.1.1 Detailed Description

Documentation for main.

6.1.2 Function Documentation

6.1.2.1 __init__()

```
def main.__init__ (
              self,
              kwargs )
```

Creator method to setup Calculator instance overrides the class init method and sets input rules with boolean flags,.

Parameters

self,kwargs	

6.1.2.2 ac()

```
def main.ac (
              self )
```

All clean method.

deletes the whole string in display.text and resets flags

Parameters

self	

6.1.2.3 build()

```
def main.build (
              self )
```

Kivy method to build the GUI.

Parameters

self	defines apps layout, title and icon

Returns

gui layout

6.1.2.4 calculate()

```
def main.calculate (
              self,
              calculation )
```

Result calculation method, uses 'mat_module' module.

Parameters

self,calculation	passes string from display.text to mat_module to calculate the equation

Precondition

mat_module evaluation returns no exception

6.1.2.5 delete()

```
def main.delete (
              self )
```

Character deleting method.

Parameters

self	deletes the last character in display.text

Precondition

display.text is already empty -> resets flags
to be deleted character is an operation -> adjusts flags

6.1.2.6 dochelp()

```
def main.dochelp (
              self,
              args )
```

Method to generate help popup.

Parameters

self,args	(not used) adds a new widget, a help popup, to the kivy layout

6.1.2.7 dotpress()

```
def main.dotpress (
              self )
```

Method to check if dot printing is allowed.

Parameters

self	

Precondition

input of dot is allowed (flag is true)

Returns

prints dot if the condition was true, otherwise nothing

6.1.2.8 numpress()

```
def main.numpress (
              self,
              num )
```

Method to adjust flags when a number was pressed.

Parameters

self,num	

Returns

updates the display.text with the new number

6.1.2.9 oppress()

```
def main.oppress (
              self,
              op )
```

Method to adjust flags when an operation was pressed.

Parameters

self,op	updates the display.text with the new operation symbol

6.1.2.10 signpress()

```
def main.signpress (
              self,
              sign )
```

Method to adjust flags when a sign was pressed.

Parameters

self,sign	updates the display.text with the new sign symbol

6.1.2.11 trigpress()

```
def main.trigpress (
              self,
              op )
```

Method to adjust flags when a trigonometric function was pressed.

Parameters

self,op	updates the display.text with the new trig. op symbol

6.2 mat_module Namespace Reference

documentation of source code of mat_module which will be used in main.py

Functions

- def add (A, B)

  ...
- def mul (A, B)

  Function muls A and B.
- def div (A, B)

  Function divides A by B.
- def root (A, B)

  Function calculates A-th root of number B.
- def factorial (A)

  Function calculates factorial of A.

- def sin (A)

  Function finds sine of A.
- def cos (A)

  Function finds cosine of A.
- def tan (A)

  Function finds tangent of A.
- def log (A)

  Function finds natural logarithm of A.
- def power (A, B)

  Function calculates value of A to the power of B.
- def isnum (char)

  Function determines whether character passed is digit.
- def lbidx (string)

  Function lbidx = left bracket index determines last index at which is "(" before ")".
- def rbidx (string)

  Function rbidx = right bracket index determines first index at which is ")" after "(".
- def evaluate (string)

  Function evaluates string as it is colection of mathematical operations.
- def findEndOfNum (string)

  Function finds index wher number stored in string ends.
- def trigonFunc (string, sign, func)

  Function calculates trigonometric functions as sin cos tan or log.
- def calcFactorSqrt (string)

  Function calculates values of roots,factorials and pi and substitues them into original string.
- def determineSign (string)

  Function function determines sign of number from "before number" substring which starts with "-" or "+".
- def calcSum (string)

  Function evaluates value of string containing only "-" or "+" operations.
- def calcBasicOperations (string, sign, operation)

  ...
- def calculate (string)

  Function evaluates simple expression consisting only from operations ^ $*$ / root !

6.2.1 Detailed Description

documentation of source code of mat_module which will be used in main.py

Date

22 April 2017 this module defines functions for evaluation of string as mathematical operation

6.2.2 Function Documentation

6.2.2.1 add()

```
def mat_module.add (
              A,
              B )
```

...

Function adds A and B

Parameters

A,B	

Precondition

A and B are float numbers

Returns

sum of A and B

6.2.2.2 calcBasicOperations()

```
def mat_module.calcBasicOperations (
              string,
              sign,
              operation )
```

...

Function substitues value of "∗" or "/" operations to original string

Parameters

string	sign is "∗" or "/" operation is pointer to func

Precondition

string is instance of data type str
sign is instance of data type str and can contain just "∗" or "/"
operation is pointer tu function with two argumants which should be used to evaluate operation

Returns

calculated value converted to str substitued to original string

6.2.2.3 calcFactorSqrt()

```
def mat_module.calcFactorSqrt (
              string )
```

Function calculates values of roots,factorials and pi and substitues them into original string.

Parameters

string	

Precondition

string is instance of data type str

Returns

string with substituted values of roots and factorials

6.2.2.4 calcSum()

```
def mat_module.calcSum (
              string )
```

Function evaluates value of string containing only "-" or "+" operations.

Parameters

string	

Precondition

string is instance of data type str and contains no other operations than "+" or "-"

Returns

calculated value converted to str

6.2.2.5 calculate()

```
def mat_module.calculate (
              string )
```

Function evaluates simple expression consisting only from operations $^\wedge$ $*$ / root !

Parameters

string	

Precondition

string is instance of data type str

Returns

calculated value converted to str substitued to original string

6.2.2.6 cos()

```
def mat_module.cos (
              A )
```

Function finds cosine of A.

Parameters

A	

Precondition

A is float number

Returns

cosine of A

6.2.2.7 determineSign()

```
def mat_module.determineSign (
              string )
```

Function function determines sign of number from "before number" substring which starts with "-" or "+".

Parameters

string	

Precondition

string is instance of data type str and starts with "+" or "-"

Returns

original string with with calculated and substitued sign at the begining

6.2.2.8 div()

```
def mat_module.div (
              A,
              B )
```

Function divides A by B.

Parameters

A,B	

Precondition

A and B are float numbers

Returns

A divided by B

6.2.2.9 evaluate()

```
def mat_module.evaluate (
              string )
```

Function evaluates string as it is colection of mathematical operations.

Parameters

string	

Precondition

string is instance of data type str

Returns

result of operations from input string transformed in string format

Postcondition

error raised if not correct mathematical operation passed

6.2.2.10 factorial()

```
def mat_module.factorial (
              A )
```

Function calculates factorial of A.

Parameters

A	

Precondition

A is float but natural number

Returns

factorial of A

6.2.2.11 findEndOfNum()

```
def mat_module.findEndOfNum (
              string )
```

Function finds index wher number stored in string ends.

Parameters

string	

Precondition

string is instance of data type str

Returns

int end index of number in string

6.2.2.12 isnum()

```
def mat_module.isnum (
              char )
```

Function determines whether character passed is digit.

Parameters

char	

Precondition

char is a string of length 1

Returns

1. 1 if char is digit
2. if char is not digit 0

6.2.2.13 lbidx()

```
def mat_module.lbidx (
              string )
```

Function lbidx = left bracket index determines last index at which is "(" before ")".

Parameters

string	

Precondition

string is instance of data type str

Returns

1. -1 if "(" or ")" not found
2. else last index at which is "(" before ")"

6.2.2.14 log()

```
def mat_module.log (
              A )
```

Function finds natural logarithm of A.

Parameters

A	

Precondition

A is float number

Returns

natural logarithm of A

6.2.2.15 mul()

```
def mat_module.mul (
              A,
              B )
```

Function muls A and B.

Parameters

A,B	

Precondition

A and B are float numbers

Returns

multiplication of A and B

6.2.2.16 power()

```
def mat_module.power (
              A,
              B )
```

Function calculates value of A to the power of B.

Parameters

A	base
B	exponent

Precondition

A and B are float numbers
B is natural whole number

Returns

A to the power B

6.2.2.17 rbidx()

```
def mat_module.rbidx (
              string )
```

Function rbidx = right bracket index determines first index at which is ")" after "(".

Parameters

string	

Precondition

string is instance of data type str

Returns

1. -1 if "(" or ")" not found
2. else first index at which is ")" after "("

6.2.2.18 root()

```
def mat_module.root (
              A,
              B )
```

Function calculates A-th root of number B.

Parameters

A,B	

Precondition

A and B are float numbers

Returns

A-th root of B

6.2.2.19 sin()

```
def mat_module.sin (
              A )
```

Function finds sine of A.

Parameters

A	

Precondition

A is float number

Returns

sine of A

6.2.2.20 tan()

```
def mat_module.tan (
              A )
```

Function finds tangent of A.

Parameters

A	

Precondition

A is float number

Returns

tangent of A

6.2.2.21 trigonFunc()

```
def mat_module.trigonFunc (
              string,
              sign,
              func )
```

Function calculates trigonometric functions as sin cos tan or log.

Parameters

string,sign	is string containing sin cos tan or log - depends on operation

Precondition

string is instance of data type str
sign is instance of data type str
func is pointer to function sin cos tan or log

Returns

string with substituted values of function

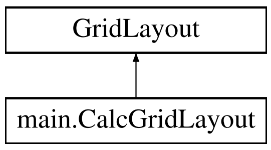
Chapter 7

Class Documentation

7.1 main.CalcGridLayout Class Reference

custom kivy GUI layout class

Inheritance diagram for main.CalcGridLayout:



7.1.1 Detailed Description

custom kivy GUI layout class

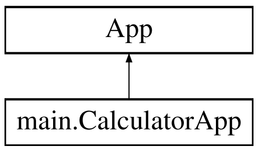
The documentation for this class was generated from the following file:

- main.py

7.2 main.CalculatorApp Class Reference

main application instance class

Inheritance diagram for main.CalculatorApp:



7.2.1 Detailed Description

main application instance class

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

- main.py

Chapter 8

File Documentation

8.1 mat_module.py File Reference

Namespaces

- mat_module

    documentation of source code of mat_module which will be used in main.py

Functions

- def mat_module.add (A, B)

    ...
- def mat_module.mul (A, B)

    Function muls A and B.
- def mat_module.div (A, B)

    Function divides A by B.
- def mat_module.root (A, B)

    Function calculates A-th root of number B.
- def mat_module.factorial (A)

    Function calculates factorial of A.
- def mat_module.sin (A)

    Function finds sine of A.
- def mat_module.cos (A)

    Function finds cosine of A.
- def mat_module.tan (A)

    Function finds tangent of A.
- def mat_module.log (A)

    Function finds natural logarithm of A.
- def mat_module.power (A, B)

    Function calculates value of A to the power of B.
- def mat_module.isnum (char)

    Function determines whether character passed is digit.
- def mat_module.lbidx (string)

    Function lbidx = left bracket index determines last index at which is "(" before ")".
- def mat_module.rbidx (string)

Function rbidx = right bracket index determines first index at which is ")" after "(".
- def mat_module.evaluate (string)

  Function evaluates string as it is colection of mathematical operations.
- def mat_module.findEndOfNum (string)

  Function finds index wher number stored in string ends.
- def mat_module.trigonFunc (string, sign, func)

  Function calculates trigonometric functions as sin cos tan or log.
- def mat_module.calcFactorSqrt (string)

  Function calculates values of roots,factorials and pi and substitues them into original string.
- def mat_module.determineSign (string)

  Function function determines sign of number from "before number" substring which starts with "-" or "+".
- def mat_module.calcSum (string)

  Function evaluates value of string containing only "-" or "+" operations.
- def mat_module.calcBasicOperations (string, sign, operation)

  ...
- def mat_module.calculate (string)

  Function evaluates simple expression consisting only from operations ^ ∗ / root !

8.1.1 Detailed Description

Author

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