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Chapter 1

Programowanie Obiektowe

1.0.0.1 Projekt arkusza kalkulacyjnego

Prosty arkusz kalkulacyjny obsługiwany w konsoli.

1.1 Interfejs użytkownika

- [ ] Wyświetlanie informacji na temat funkcji
- [ ] prezentacja arkusza
- [ ] możliwość zmiany rozmiaru tablicy
- [ ] możliwość zmiany danych w arkuszu
- [ ] możliwość wykonywania operacji na arkuszu
- [ ] możliwość wrócenia do menu

1.2 Operacyjna

1.2.0.1 obliczenia i zmiany rozmiaru tablicy:

- [ ] wprowadzanie danych do arkusza
- [ ] dodawanie komórek
- [ ] odejmowanie komórek
- [ ] mnożenie komórek
- [ ] dzielenie komórek
- [ ] średnia z komórek
- [ ] zapisywanie wyniku do konkretnej komórki
- [ ] zmiana rozmiaru tablicy bez utraty danych

1.2.0.2 prezentacja oraz zapisywanie:

- [ ] prezentacja tablicy
- [ ] zapisywanie wyniku do konkretnej komórki
- [ ] odczytywanie danych z pliku
- [ ] zapisywanie danych do pliku

Chapter 2

Hierarchical Index

2.1 Class Hierarchy

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

- Array . . . 7
- ArrayDisplay . . . 14
- Cell . . . 15
  - DecimalCell . . . 18
  - TextCell . . . 24
- CellValue . . . 17
- Identifier . . . 19
- Menu . . . 20
- OperationHandler . . . 23

Chapter 3

Class Index

3.1 Class List

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

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CellValue 17
DecimalCell 18
Identifier 19
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This is a class handling menu operations 20
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Chapter 4

Class Documentation

4.1 Array Class Reference

This is a class handling all operations on sheet.

```
#include <array.h>
```

Public Member Functions

- Array (int columns, int rows)

  Constructor of class.
- int columns () const
- int rows () const
- float sum (Identifier ∗identifiers, int length)

  func that return sum of values depends on each one position in sheet and returns result.
- float subtract (Identifier minued, Identifier subtrahend)

  func that subtract two values from sheet and returns result.
- float divide (Identifier divisor, Identifier dividend)

  func that divide two values from sheet and returns result.
- float multiplication (Identifier ∗identifiers, int length)

  func that return multiplication of values depends on each one position in sheet and returns result.
- float average (Identifier ∗identifiers, int length)

  func that return average value of values depends on each one position in sheet and returns result.
- void changeValue (Identifier identifier, CellValue value)

  func that change value single position in sheet and return true or false depends on result.
- void resizeSheet (int columns, int rows)

  func that resize sheet with no data lose.
- float getNumberFromSheet (Identifier identifier)

  func that return single value from sheet depends on it position.
- CellValue **getCellFromSheet** (Identifier identifier)
- std::string getStringFromSheet (Identifier identifier)

  func that return single value from sheet depends on it position.
- void saveDataToFile ()

  func that save data from array to file (NOT IMPLEMENTED)
- void loadDataFromFile ()

  func that load data from file (NOT IMPLEMENTED)
- int getMaxLengthValue (int precision)
- template<typename T >
  std::string to_string_with_precision (const T a_value, const int n)

4.1.1 Detailed Description

This is a class handling all operations on sheet.

4.1.2 Constructor & Destructor Documentation

4.1.2.1 Array()

```
Array::Array (
             int columns,
             int rows )  [inline]
```

Constructor of class.

Just in time of creating array object constructor configure sheet variable to proper value of rows and columns. Construction also configure columns and rows properties.

4.1.3 Member Function Documentation

4.1.3.1 average()

```
float Array::average (
             Identifier * identifiers,
             int length )
```

func that return average value of values depends on each one position in sheet and returns result.

Parameters

in	*identifiers*	- array that holds position of cells.
in	*length*	- length of array.

Returns

- float value

4.1.3.2 changeValue()

```
void Array::changeValue (
             Identifier identifier,
             CellValue value )
```

func that change value single position in sheet and return true or false depends on result.

Parameters

in	*identifier*	- position of cell that gonna be changed.
in	*value*	- float value to write up.

Returns

- nothing or exception

4.1.3.3 columns()

```
int Array::columns ( ) const
```

Returns

numbers of columns

4.1.3.4 divide()

```
float Array::divide (
            Identifier divisor,
            Identifier dividend )
```

func that divide two values from sheet and returns result.

Parameters

in	*divisor*	- first number identifier
in	*dividend*	- second number identifier

Returns

- float value or exception.

4.1.3.5 getMaxLengthValue()

```
int Array::getMaxLengthValue (
            int precision )
```

func search max value stored in sheet.

Parameters

precision	- precision to round off

Returns

- max value as float

4.1.3.6 getNumberFromSheet()

```
float Array::getNumberFromSheet (
             Identifier identifier )
```

func that return single value from sheet depends on it position.

Parameters

identifier	- position of cell that value func gonna return.

Returns

return float or exception

4.1.3.7 getStringFromSheet()

```
std::string Array::getStringFromSheet (
             Identifier identifier )
```

func that return single value from sheet depends on it position.

Parameters

identifier	- position of cell that value func gonna return.

Returns

return string or exception

4.1.3.8 loadDataFromFile()

```
void Array::loadDataFromFile ( )
```

func that load data from file (NOT IMPLEMENTED)

Returns

- nothing

4.1.3.9 multiplication()

```
float Array::multiplication (
             Identifier * identifiers,
             int length )
```

func that return multiplication of values depends on each one position in sheet and returns result.

Parameters

in	*identifiers*	- array that holds position of cells.
in	*length*	- length of array.

Returns

- float value

4.1.3.10 resizeSheet()

```
void Array::resizeSheet (
             int columns,
             int rows )
```

func that resize sheet with no data lose.

Parameters

in	*columns*	- new numbers of columns in sheet.
in	*rows*	- new numbers of rows in sheet.

Returns

return nothing or exception

4.1.3.11 rows()

```
int Array::rows ( ) const
```

Returns

number of rows

4.1.3.12 saveDataToFile()

```
void Array::saveDataToFile ( )
```

func that save data from array to file (NOT IMPLEMENTED)

Returns

- nothing

4.1.3.13 subtract()

```
float Array::subtract (
            Identifier minued,
            Identifier subtrahend )
```

func that subtract two values from sheet and returns result.

Parameters

in	*minued*	- first number identifier
in	*subtrahend*	- second number identifier

Returns

- float value or exception

4.1.3.14 sum()

```
float Array::sum (
            Identifier * identifiers,
            int length )
```

func that return sum of values depends on each one position in sheet and returns result.

Parameters

in	*identifiers*	- array that holds position of cells.
in	*length*	- holds length of identifiers array

Returns

- float value or exception

4.1.3.15 to_string_with_precision()

```
template<typename T >
std::string Array::to_string_with_precision (
             const T a_value,
             const int n )
```

func search max value stored in sheet.

Parameters

n	- precision to round off
a_value	- value to round off

Returns

- rounded value as string

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

- Header Files/array.h
- Source Files/array.cpp

4.2 ArrayDisplay Class Reference

This is a class handling displaying sheet.

```
#include <array_display.h>
```

Public Member Functions

- void Display (Array ∗arr)

  func that display sheet.
- template<typename T >
  std::string to_string_with_precision (const T a_value, const int n=6)

4.2.1 Detailed Description

This is a class handling displaying sheet.

4.2.2 Member Function Documentation

4.2.2.1 Display()

```
void ArrayDisplay::Display (
             Array ∗ arr )
```

func that display sheet.

Parameters

in	*Array*	- 2D array that holds sheet.

Returns

- void or exception

4.2.2.2 to_string_with_precision()

```
template<typename T >
std::string ArrayDisplay::to_string_with_precision (
             const T a_value,
             const int n = 6 )
```

func search max value stored in sheet.

Parameters

n	- precision to round off
a_value	- value to round off

Returns

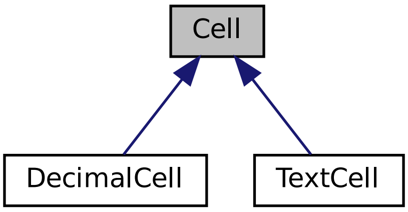
- rounded value as string

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

- Header Files/array_display.h
- Source Files/array_display.cpp

4.3 Cell Class Reference

Inheritance diagram for Cell:



Public Member Functions

- virtual void changeValue (std::string val)=0
- virtual CellValue getValue ()=0

4.3.1 Member Function Documentation

4.3.1.1 changeValue()

```
virtual void Cell::changeValue (
             std::string val )  [pure virtual]
```

func that change value

Parameters

value	- param that hold value

Returns

- void

Implemented in DecimalCell, and TextCell.

4.3.1.2 getValue()

```
virtual CellValue Cell::getValue ( )  [pure virtual]
```

func that change value

Parameters

value	- param that hold value

Returns

- void

Implemented in DecimalCell, and TextCell.

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

- Models/Cell.h

4.4 CellValue Class Reference

Public Member Functions

- **CellValue** (float value)
- **CellValue** (const std::string value)
- bool areDecimalOperationsAllowed ()
- float getDecimalValue ()
- std::string getTextValue ()

4.4.1 Member Function Documentation

4.4.1.1 areDecimalOperationsAllowed()

```
bool CellValue::areDecimalOperationsAllowed ( )
```

func check if Cell value is string or decimal

Returns

- bool statement

4.4.1.2 getDecimalValue()

```
float CellValue::getDecimalValue ( )
```

func that return float type value

Returns

- float value

4.4.1.3 getTextValue()

```
std::string CellValue::getTextValue ( )
```

func that return string type value

Returns

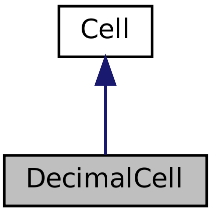
- string value

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

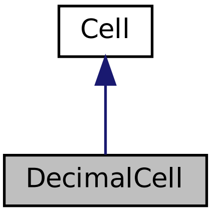
- Models/CellValue.h
- Models/CellValue.cpp

4.5 DecimalCell Class Reference

Inheritance diagram for DecimalCell:



Collaboration diagram for DecimalCell:



Public Member Functions

- void changeValue (std::string val) override
- CellValue getValue () override
- **DecimalCell** (float val)

4.5.1 Member Function Documentation

4.5.1.1 changeValue()

```
void DecimalCell::changeValue (
             std::string val )  [override], [virtual]
```

func that change value

Parameters

value	- param that hold value

Returns

- void

Implements Cell.

4.5.1.2 getValue()

```
CellValue DecimalCell::getValue ( )  [override], [virtual]
```

func that change value

Parameters

value	- param that hold value

Returns

- void

Implements Cell.

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

- Models/DecimalCell.h
- Models/DecimalCell.cpp

4.6 Identifier Struct Reference

Public Member Functions

- **Identifier** (int column, int row)

Public Attributes

- int **Column**
- int **Row**

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

- Models/Identifier.h

4.7 Menu Class Reference

This is a class handling menu operations.

```
#include <menu.h>
```

Static Public Member Functions

- static Operations showFunctions ()

  func that get from user selected operation.
- static Identifier getIdentifier (const std::string &message)

  func that get cell identifier from user.
- static float getNumber (const std::string &message)

  func that get number from user.
- static CellValue getCell (const std::string &message)

  func that get string from user.
- static void message (const std::string &message)

  func that send message to user.
- static void alert (const std::string &message)

  func that send alert message to user.
- static int getch ()

  func that getch char without waiting for enter source: `https://cboard.cprogramming.com/faq-board/27714-faq-there-getch-conio-equivalent-linux-unix.html`
- static void clear ()

  func that clear console

4.7.1 Detailed Description

This is a class handling menu operations.

4.7.2 Member Function Documentation

4.7.2.1 alert()

```
void Menu::alert (
            const std::string & message )  [static]
```

func that send alert message to user.

Parameters

in	*message*	- message to user.

Returns

return void

4.7.2.2 clear()

```
void Menu::clear ( )  [static]
```

func that clear console

Returns

void

4.7.2.3 getCell()

```
CellValue Menu::getCell (
             const std::string & message )  [static]
```

func that get string from user.

Parameters

in	*message*	- message to user.

Returns

return float value

4.7.2.4 getch()

```
int Menu::getch ( )  [static]
```

func that getch char without waiting for enter source: https://cboard.cprogramming.com/faq-board/27714-faq-there-getch-conio-equivalent-linux-unix.html

Returns

return int value of char

4.7.2.5 getIdentifier()

```
Identifier Menu::getIdentifier (
             const std::string & message )  [static]
```

func that get cell identifier from user.

Parameters

in	*message*	- message to user.

Returns

return Identifier of cell

4.7.2.6 getNumber()

```
float Menu::getNumber (
             const std::string & message )  [static]
```

func that get number from user.

Parameters

in	*message*	- message to user.

Returns

return float value

4.7.2.7 message()

```
void Menu::message (
             const std::string & message )  [static]
```

func that send message to user.

Parameters

in	*message*	- message to user.

Returns

return void

4.7.2.8 showFunctions()

```
Operations Menu::showFunctions ( )  [static]
```

func that get from user selected operation.

Returns

return operation enum

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

- Header Files/menu.h
- Source Files/menu.cpp

4.8 OperationHandler Class Reference

This is a class handling menu operations.

```
#include <operation_handler.h>
```

Static Public Member Functions

- static int decimalOperation (Operations operation, Array ∗arr)

  static func that handling decimal operations.

4.8.1 Detailed Description

This is a class handling menu operations.

4.8.2 Member Function Documentation

4.8.2.1 decimalOperation()

```
int OperationHandler::decimalOperation (
            Operations operation,
            Array ∗ arr )  [static]
```

static func that handling decimal operations.

Parameters

in,out	*arr*	- 2D array that holds sheet.
in	*operation*	- enum instance that holds user operation.

Returns

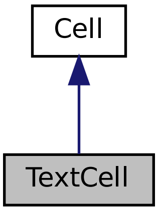
- -1 if exit, 0 if everything is okey.

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

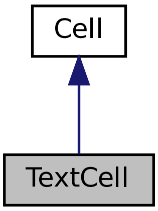
- Header Files/operation_handler.h
- Source Files/operation_handler.cpp

4.9 TextCell Class Reference

Inheritance diagram for TextCell:



Collaboration diagram for TextCell:



Public Member Functions

- void changeValue (std::string val) override
- CellValue getValue () override
- **TextCell** (const std::string &val)

4.9.1 Member Function Documentation

4.9.1.1 changeValue()

```
void TextCell::changeValue (
             std::string val )  [override], [virtual]
```

func that change value

Parameters

value	- param that hold value

Returns

- void

Implements Cell.

4.9.1.2 getValue()

```
CellValue TextCell::getValue ( )  [override], [virtual]
```

func that change value

Parameters

value	- param that hold value

Returns

- void

Implements Cell.

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

- Models/TextCell.h
- Models/TextCell.cpp

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