```
QMainWindow
             MainWindow
- Ui::MainWindow * ui
 RenderArea * renderArea
const alpha::vector
 < Shape * > * renderShapes
const UserAccount
  currUser
 QLabel * userStatusLabel
 ColumnEditDelegate
   ' delegate
 QWidget * contactUsWidget
- QLabel * logoLabel
 QLabel * teamNameLabel
 QWidget * contactWindow
+ MainWindow(QWidget
  *parent=nullptr)
+ MainWindow(QWidget
  *parent, const alpha
  ::vector< Shape * > *rendered
  Shapes, const UserAccount
   *currUser)
+ ~MainWindow()
+ void drawShapes() const
+ void shapes_to_treeWidget()
+ void onRenderAreaChanged()
+ void onRenderAreaNotChanged
  (const QString &message)
+ void showRenderStatusMessage
  (const QString &message)
+ void onLoginClicked()
+ void onLoginRequest
  (const QString &username,
  const QString &password)
+ void onSignupRequest
  (const QString &username,
  const QString &password,
  const bool admin)
+ void onUserAuthentication
  (const UserAccount *currUser)
+ void onUserAuthentication
  Failure(const QString &message)
 void addToShapeTree
  (Shape *shape)
 QString loadStyleSheet
  (const QString &path)
 QComboBox * createShapeType
 ComboBox(const QString &current
  ShapeType)

    QSpinBox * createPenWidth

  SpinBox(int currentPenWidth)
 QComboBox * createColorCombo
  Box(int currentColor)
 QComboBox * createPenStyle
 ComboBox(int currentPenStyle)
  QComboBox * createPenCap
  StyleComboBox(int currentPen
  CapStyle)
  QComboBox
               createPenJoin
  StyleComboBox(int currentPenJoin
  Style)
 QComboBox * createBrushStyle
 ComboBox(int currentBrushStyle)
 QComboBox * createAlignment ComboBox(Qt::AlignmentFlag
  currentAlignment)
 QComboBox * createFontCombo
  Box(QFont currentFont)
 QComboBox * createFontStyle
  ComboBox(int currentFontStyle)
 QComboBox * createFontWeight
   ComboBox(QFont::Weight currentFont
  Weight)
 void setupTestimonials()
 void onToggleStyle
  (bool checked=true)
 void on_actionnew_line
  _button_triggered()
 void on_actionnew_square
  _button_triggered()
 void on_actionnew_rectange
  _button_triggered()
 void on_actionnew_circle
  _button_triggered()
 void on_actionnew_ellipse
  _button_triggered()
 void on_actionnew_polyline
  _button_triggered()
 void on_actionnew_polygon
  _button_triggered()
void on_actionnew_text
  _button_triggered()

    void on_actionremove

  _shape_button_triggered()
 void onSortMethodChanged
  (int index)
 void onTreeWidgetItemChanged
  (QTreeWidgetItem *item, int
  column)
 void onComboBoxChanged
  (int newIndex)
 void onSpinBoxChanged()
void showTestimonialPrompt()
 void showTestimonialsDisplay()
 void onContactUsClicked()
 Ui::MainWindow * ui
 RenderArea * renderArea
 const alpha::vector
  < Shape * > * renderShapes
 const UserAccount *
  currUser
 QLabel * userStatusLabel
  ColumnEditDelegate
  * delegate
 QTabWidget * tabWidget
 QTableWidget * shapeTable
 QComboBox * sortDropdown
 QComboBox * sortOrderDropdown
 void createShapeTableTab()
 QWidget * contactUsWidget
* QLabel * logoLabel
 QLabel * teamNameLabel
 QWidget * contactWindow
* MainWindow(QWidget
   parent=nuliptr)
* MainWindow(QWidget
  *parent, const alpha
  ::vector< Shape * > *rendered
  Shapes, const UserAccount
   *currUser)
 ~MainWindow()
 void drawShapes() const
 void shapes_to_treeWidget()
 void shapeAdded(Shape
   *shape)
 void shapeChanged(Shape
  *shape, QString key,
  int value)
 void displayedTextChanged
  (Text *text, QString newText)
 void shapeDeleted(int
  trackerId)
 void deleteAllShapes()
 void loginAttempt(const
  QString &username, const
  QString &password)
 void newUserAdded(const
  QString &username, const
  QString &password, const
  bool admin)
 void loginSuccess()
 void loginFailed(const
  QString &message)
 void onRenderAreaChanged()
 void onRenderAreaNotChanged
  (const QString &message)
 void showRenderStatusMessage
  (const QString &message)
  void onLoginClicked()
 void onLoginRequest
  (const QString &username,
  const QString &password)
  void onSignupRequest
  (const QString &username,
  const QString &password,
  const bool admin)
 void onUserAuthentication
  (const UserAccount *currUser)
 void onUserAuthentication
  Failure(const QString &message)
 void onToggleStyle
  (bool checked=true)
 void on_actionnew_line
  _button_triggered()
 void on_actionnew_square
  _button_triggered()
 void on_actionnew_rectange
  _button_triggered()
 void on_actionnew_circle
  _button_triggered()
  void on_actionnew_ellipse
  _button_triggered()
 void on_actionnew_polyline
  _button_triggered()
 void on_actionnew_polygon
  _button_triggered()
 void on_actionnew_text
  _button_triggered()
 void on_actionremove
  _shape_button_triggered()
  void onSortMethodChanged
  (int index)
* void onTreeWidgetItemChanged
  (QTreeWidgetItem *item, int
  column)
  void onComboBoxChanged
  (int newIndex)
 void onSpinBoxChanged()
 void showTestimonialPrompt()
 void showTestimonialsDisplay()
  void onContactUsClicked()
 void addToShapeTree
  (Shape *shape)
 QString loadStyleSheet
  (const QString &path)
  QComboBox * createShapeType
  ComboBox(const QString &current
  ShapeType)
 QSpinBox * createPenWidth
  SpinBox(int currentPenWidth)
  QComboBox * createColorCombo
  Box(int currentColor)
 QComboBox * createPenStyle
  ComboBox(int currentPenStyle)
 QComboBox * createPenCap
  StyleComboBox(int currentPen
  CapStyle)
  QComboBox * createPenJoin
  StyleComboBox(int currentPenJoin
  Style)
 QComboBox * createBrushStyle
  ComboBox(int currentBrushStyle)
  QComboBox * createAlignment
  ComboBox(Qt::AlignmentFlag
  currentAlignment)
  QComboBox * createFontCombo
  Box(QFont currentFont)
 QComboBox * createFontStyle
  ComboBox(int currentFontStyle)
  QComboBox * createFontWeight
  ComboBox(QFont::Weight currentFont
  Weight)
 void selection_sort
  (alpha::vector< Shape
  *> &shapes, bool(*compare)
(const Shape *, const Shape
   ), bool ascending)
 void populateShapeTable
  (const alpha::vector<
  Shape * > &shapes)
 static bool sortById
  (const Shape *a, const
  Shape *b)
  static bool sortByArea
  (const Shape *a, const
  Shape *b)
  static bool sortByPerimeter
  (const Shape *a, const Shape *b)
  void setupTestimonials()
```