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1 Data Structures

1.2 Array

Class	Name	Explanation	Sample	Operations
StaticTool	Num[]	Display mine numbers around a cell(picture)	10	setIcon()
StaticTool	Time[]	Display time left(one number stands for one number picture)	11	setIcon()
LayBomb	Label[][]	An object to store all status of a cell	9*9	IsMineTag()
Listener	mineLabel[]	An object to store position and click times of a cell	9*9	Init()

1.2 Object

Class type	Name
Jpanel	panel
JButton	Button

	buttonsure buttonCancer
JTextArea	textArea
JscrollPane	scrollPane
JtextField	JtextFieldHeigh JtextFieldWidth
Box	BoxeS BoxeT
UserdefinedListener	definedListener
BombJpanel	bombJpanel
BaceJpanel	faceJpanel
TimerListener	timerListener
BombJMenuBar	menuBar
Timer	timer
JMenu	menuGame menuHelp menuHero
JMenuItem	menuItemStart menuItemExit menuItemCustom
JLabel	labelCourtG labelCourtS labelCourtD labelTimeG labelTimeS labelTimeD
FaceLabelListener	faceLabelListener
BoxLayout	boxLayout

ImageIcon	Icon0 Icon1 Icon2 iconSmile
Random	random

1.3 Class

Class Name	Data Diagram	Data Example
HeroBean	Int time String name	241 "Trump"
MineLabel	Boolean mineTag Boolean flagTag Boolean expandTag int rowx Int coly Int counAround Int rightClickCount	true false false 12 14 3 0
AboutSweeping	JLabel LabelIcon JLabel labelOne JLabel LabelFour Box boxOne Box boxFour JPanel panelT	
HeroDialog	Jpanel panel JTextArea textArea	
UserDefinedJDialog	Jpanel panel JButton buttonSure	

	JButton buttonCancel JLabel jLabelHigh JLabel jLabelWide JLabel jLabelBomb JTextField jTextFieldHigh JTextField jTextFieldWide JTextField jTextFieldBomb	
Listener	Boolean isDoublePress MineLabel[] mineLabe MainFrame mainFrame	False
UserDefinedListener	UserDefinedJDialog userDefinedJDialog MainFrame mainFrame	
TimerListener	MainFrame mainFrame	
LayBomb	Null	
StaticTool	Boolean isStart Int allcount 12 Int allcol 2 Int allrow 1 Int timecount 34 Int bombcount 11 ImageIcon imageIcon (.ico) Icon iconBlank ... Icon bloodIcon Icon icon0 Icon clickIcon Icon smileIcon Icon faultFacelIcon Icon winFacelIcon Icon flagIcon	True

	Icon askIcon Icon askPressIcon Icon downSmileIcon Icon errorBombIcon Icon blackBombIcon Icon[] num Icon[] time TreeSet<HeroBean> treeSetC TreeSet<HeroBean> treeSetZ TreeSet<HeroBean> treeSetG	
FaceJpanel	JLabel labelCountG JLabel labelCountS JLabel labelCountB JLabel labelTimeG JLabel labelTimeS JLabel labelTimeB JLabel LabelFace MainFrame mainFrame	
BombJPanel	MineLabel[][] labels Listener listener MainFrame mainFrame	
BombJMenuBar	JMenu menuGame JMenu menuHelp JMenu menuHero JMenuItem menuItemStart JMenuItem menuItemExit JMenuItem menuItemCustom JMenuItem menuItemAbout JMenuItem menuItemG	

	JMenuItem menuItemS JMenuItem menuItemB JMenuItem menuHeroG JMenuItem menuHeroS JMenuItem menuHeroB MainFrame mainFrame	
MainFrame	BombJMenuBar menuBar BombJPanel bombJPanel FaceJpanel faceJpanel Timer timer TimerListener timerListener	

2 Algorithms

2.1 Class: HeroBean

HeroBean	
Method Signature	public HeroBean(int time, String name)
Purpose	Creates a new Hero, and calls to fill name and time.
Algorithm	Sets time and name by passed parameters.

getTime	
Method Signature	public int getTime()
Purpose	Returns time.

setTime	
Method Signature	public void setTime(int time)

Purpose	Sets time.
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getName	
Method Signature	public String getName()
Purpose	Returns name.

setName	
Method Signature	public void setName(String name)
Purpose	Sets name.

compareTo	
Method Signature	public int compareTo(HeroBean o)
Purpose	Compares two times.
Algorithm	this.time minus o.time, return result. Override.

toString	
Method Signature	public String toString()
Purpose	Converts integer to string.
Algorithm	Uses plus to connect each parts. Override.

2.2 Class: MineLabel

MineLabel	
Method Signature	public MineLabel(int x, int y)
Purpose	Creates a new MineLabel, and calls to fill x and y.
Algorithm	Sets x and y by passed parameters.

isMineTag	
Method Signature	public boolean isMineTag()
Purpose	Decides if is mine.
Algorithm	Returns mineTag.

setMineTag	
Method Signature	public void setMineTag(boolean mineTag)
Purpose	Sets mine tags.

isExpendTag	
Method Signature	public boolean isExpendTag()
Purpose	Decides if is expand.
Algorithm	Returns expendTag.

setExpendTag	
Method Signature	public void setExpendTag(boolean expendTag)
Purpose	Sets expand tags.

getRowx	
Method Signature	public int getRowx()
Purpose	Returns rowx.

setRowx	
Method Signature	public void setRowx(int rowx)
Purpose	Sets rowx.

getColy	
Method Signature	public int getColy()

Purpose	Returns coly.
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setColy	
Method Signature	public void setColy(int coly)
Purpose	Sets coly.

getCounAround	
Method Signature	public int getCounAround()
Purpose	Returns coun around.

setCounAround	
Method Signature	public void setCounAround(int counAround)
Purpose	Sets count around

getRightClickCount	
Method Signature	public int getRightClickCount()
Purpose	Returns right-click count.

setRightClickCount	
Method Signature	public void setRightClickCount(int rightClickCount)
Purpose	Sets right-click count.

2.3 Class: BombJMenuBar

BombJMenuBar	
Method Signature	public BombJMenuBar(MainFrame mainFrame)
Purpose	Creates a new BombJMenuBar, and calls to init.

Algorithm	Sets mainFrame by passed parameter and calls init().
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init	
Method Signature	private void init()
Purpose	Init the BombJMenuBar. Called by constructor.
Algorithm	Adds ActionListeners and sets other layout.

2.4 Class: FaceJPanel

FaceJPanel	
Method Signature	public FaceJPanel(MainFrame frame)
Purpose	Creates a new FaceJPanel, and calls to init.
Algorithm	Sets mainFrame by passed parameter, sets Layout and calls init().

init	
Method Signature	private void init()
Purpose	Init the FaceJPanel. Called by constructor.
Algorithm	Adds ActionListeners and sets other layout like boxes.

getLabelFace	
Method Signature	public JLabel getLabelFace()
Purpose	Returns LabelFace.

setTime	
Method Signature	public void setTime(int count)
Purpose	Sets time.

setNumber	
Method Signature	public void setNumber(int count)
Purpose	Sets number.

2.5 Class: BombJPanel

BombJPanel	
Method Signature	public BombJPanel(MainFrame mainFrame)
Purpose	Creates a new BombJPanel, and calls to fill mainFrame.
Algorithm	Sets mainFrame by passed parameter, sets Layout and calls init().

init	
Method Signature	private void init()
Purpose	Init the BombJPanel. Called by constructor.
Algorithm	Inits the matrix of the game , adds ActionListeners and sets other layout like borders.

2.6 Class: AboutSweeping

AboutSweeping	
Method Signature	public AboutSweeping(MainFrame mainFrame)
Purpose	Creates a new AboutSweeping, and calls to fill mainFrame.
Algorithm	Sets mainFrame by passed parameter, sets Title, sets Size, sets other Layout and calls init().

getPanel

Method Signature	<code>private JPanel getPanel()</code>
Purpose	Returns panel.

2.7 Class: HeroDialog

HeroDialog	
Method Signature	<code>public HeroDialog(int level, MainFrame mainFrame)</code>
Purpose	Creates a new HeroDialog, and calls to fill mainFrame.
Algorithm	Sets mainFrame by passed parameter, sets Title, sets Size, sets other Layout and calls init().

getPanel	
Method Signature	<code>public JPanel getPanel()</code>
Purpose	Returns panel.

addMessage	
Method Signature	<code>private void addMessage()</code>
Purpose	Add the game records to the statics tool.
Algorithm	For each level, append the herobean to the list.

2.8 Class: UserDefinedJDialog

UserDefinedJDialog	
Method Signature	<code>public UserDefinedJDialog(final MainFrame mainFrame)</code>
Purpose	Creates a new UserDefinedJDialog, and calls to fill mainFrame.
Algorithm	Sets mainFrame by passed parameter, sets Title, sets Size, sets other Layout and calls init().

getPanel	
Method Signature	public JPanel getPanel()
Purpose	Returns panel.

getjLabelMessage	
Method Signature	public JLabel getjLabelMessage()
Purpose	Returns jLabelMessage.

getjTextFieldHigh()	
Method Signature	public JTextField getjTextFieldHigh()
Purpose	Returns jTextFieldHigh.

getjTextFieldWide	
Method Signature	public JTextField getjTextFieldWide()
Purpose	Returns jTextFieldWide.

getjTextFieldBomb	
Method Signature	public JTextField getjTextFieldBomb()
Purpose	Returns jTextFieldBomb.

getButtonSure	
Method Signature	public JButton getButtonSure()
Purpose	Returns ButtonSure.

getButtonCancer	
Method Signature	public JButton getButtonCancer()
Purpose	Returns ButtonCancel.

2.9 Class: LayBomb

lay	
Method Signature	public static void lay(MineLabel[][] lable, int row, int col)
Purpose	Lays the mines of the game.
Algorithm	Randomly lays and fills the 2D array.

computeBomb	
Method Signature	public static void computeBomb(MineLabel lable[][])
Purpose	Calculate the num of the bombs of each mine.
Algorithm	Uses isMineTag to mark and compute.

2.10 Class: Listener

Listener	
Method Signature	public Listener(MineLabel[][] mineLabel, MainFrame mainFrame)
Purpose	Creates a new Listener, and calls to fill mainFrame and mineLabel.
Algorithm	Sets mainFrame and mineLabel by passed parameter.

mousePressed	
Method Signature	public void mousePressed(MouseEvent e)
Purpose	Processes MouseEvent mousePressed.
Algorithm	Init rows and columns, sets icons, sets flagTags and other initial counting variables.

mouseReleased	
Method Signature	public void mouseReleased(MouseEvent e)
Purpose	Processes MouseEvent mouseReleased.
Algorithm	Inits rows and columns, sets icons like smileIcon and faultFaceIcon, sets flagTags and other initial counting variables.

bombAction	
Method Signature	private void bombAction(int row, int col)
Purpose	Decides and sets the blackBombIcon and errorBombIcon.
Algorithm	Decides with isMineTag and isFlagTag, if (isMineTag() and !isFlagTag()) {blackBombIcon} else if(!isMineTag() and isFlagTag()) {errorBombIcon}...

expand	
Method Signature	private void expand(int x, int y)
Purpose	Recursively decides and sets tags and icons.
Algorithm	Decides with CountAround, isExpendTag and isFlagTag, if (isExpendTag() and !isFlagTag()) {if(CountAround==0) {setIcon setExpendTag recursively calls expand() in loop} else{setIcon setExpendTag}...

backIcon	
Method Signature	private void backIcon(int i, int j)

Purpose	Sets the askIcon and blankIcon.
Algorithm	<pre> Decides with rightClickCount, isMineTag and isFlagTag, if (isMineTag() and !isFlagTag()) { if(2==rightClickCount) {setIcon1: askIcon} else {setIcon2: iconBlank} }... </pre>

doublePress	
Method Signature	private void doublePress(int i, int j)
Purpose	Double press and actions.
Algorithm	<pre> Decides with isMineTag and isFlagTag, if (isMineTag() and !isFlagTag()) {bombAction} else if(!isMineTag() and !isFlagTag()) {expand}... </pre>

doubleExpend	
Method Signature	private void doubleExpend(int i, int j)
Purpose	Double expend and actions.
Algorithm	<pre> Decides with isMineTag and rightClickCount, if (rightClickCount==2 and !isFlagTag()) {setIcon1: askPressIcon} else if(!isMineTag()) {setIcon2: icon0}... </pre>

isWin

Method Signature	private void isWin()
Purpose	Decides the player if is win.
Algorithm	Retuens true or false.

2.11 Class: UserDefinedListener

UserDefinedListener	
Method Signature	public UserDefinedListener(UserDefinedJDialog userDefinedJDialog, MainFrame mainFrame)
Purpose	Creates a new UserDefinedListener, and calls to fill mainFrame and userDefinedJDialog.
Algorithm	Sets mainFrame and userDefinedJDialog by passed parameter.

actionPerformed	
Method Signature	public void actionPerformed(ActionEvent e)
Purpose	Processes various action events when buttons are click upon.
Algorithm	Decides the customed input if is valid and init the game.

2.12 Class: TimerListener

TimerListener	
Method Signature	public TimerListener(MainFrame mainFrame)
Purpose	Creates a new TimerListener, and calls to fill mainFrame.
Algorithm	Sets mainFrame by passed parameter.

actionPerformed	
Method Signature	public void actionPerformed(ActionEvent e)

Purpose	Processes various action events when buttons are click upon.
Algorithm	<pre>timecount++ if (timecount > timeLimit) timecount = timeLimit...</pre>

2.13 Class: StaticTool

getLevel	
Method Signature	public static int getLevel()
Purpose	Returns level.

2.14 Class: MainFrame

MainFrame	
Method Signature	public MainFrame()
Purpose	Creates the initial window utilizing the JFrame constructor, and then calls to buildPadlockWindow()
Algorithm	Sets Title, sets Size, sets other Layout and calls init().

init	
Method Signature	private void init()
Purpose	Init the MainFrame. Called by constructor.
Algorithm	Sets JMenuBar, adds faceJPanel and bombJPanel.

reStartGame	
Method Signature	public void reStartGame()
Purpose	Restarts the game.

Algorithm	Remove the old faceJPanel and bombJPanel, and adds them again. Inits the counting variables like timer, bombCount and timeCount.
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getFaceJPanel	
Method Signature	public FaceJPanel getFaceJPanel()
Purpose	Returns FaceJPanel.

getBombJPanel	
Method Signature	public BombJPanel getBombJPanel()
Purpose	Returns BombJPane.

getTimer	
Method Signature	public Timer getTimer()
Purpose	Returns timer.

main	
Method Signature	public static void main(String[] args)
Purpose	Entry fuction of Main class, starts the program.
Algorithm	Creates a new MineFrame.

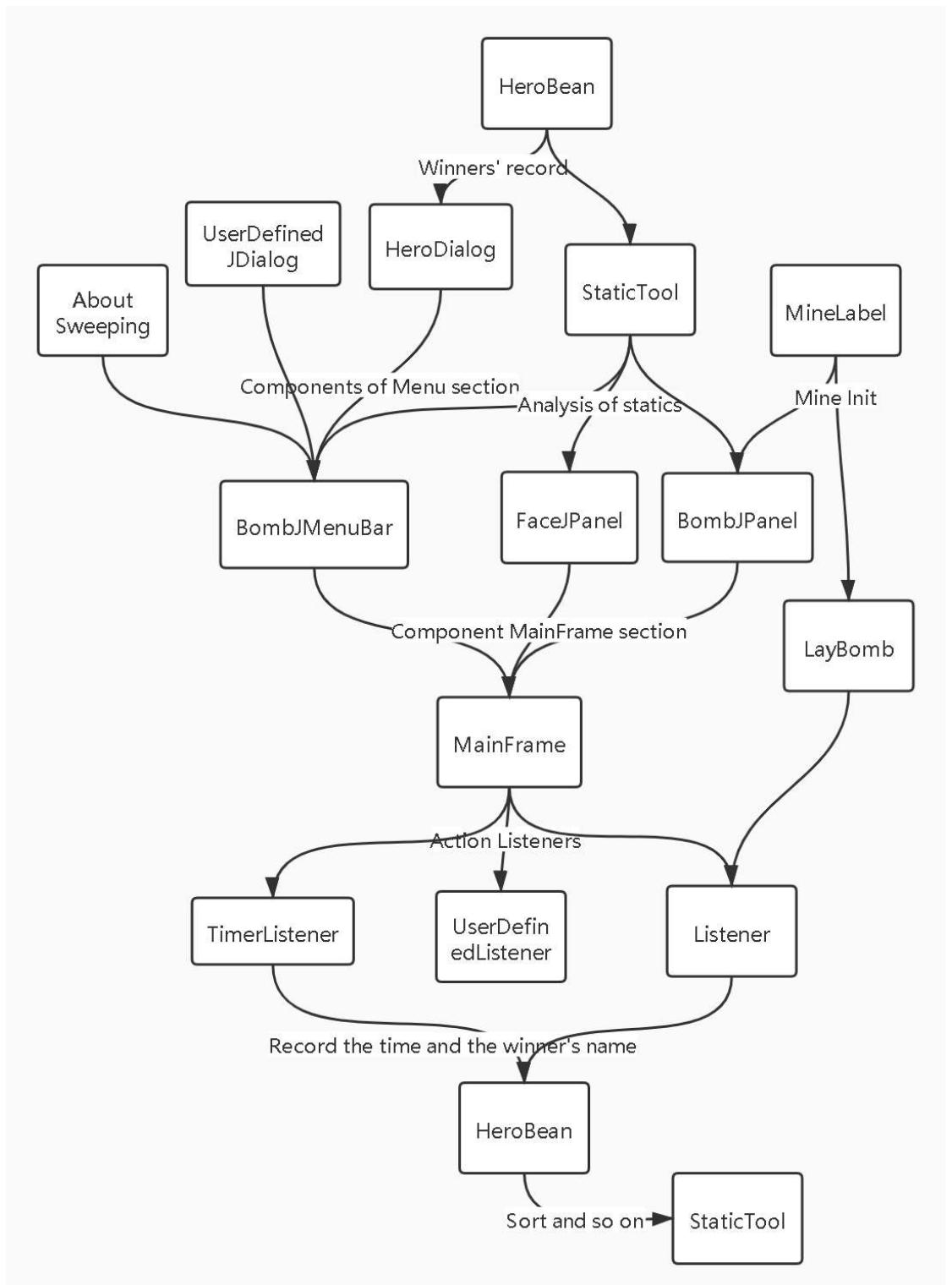
3 Modular Organization

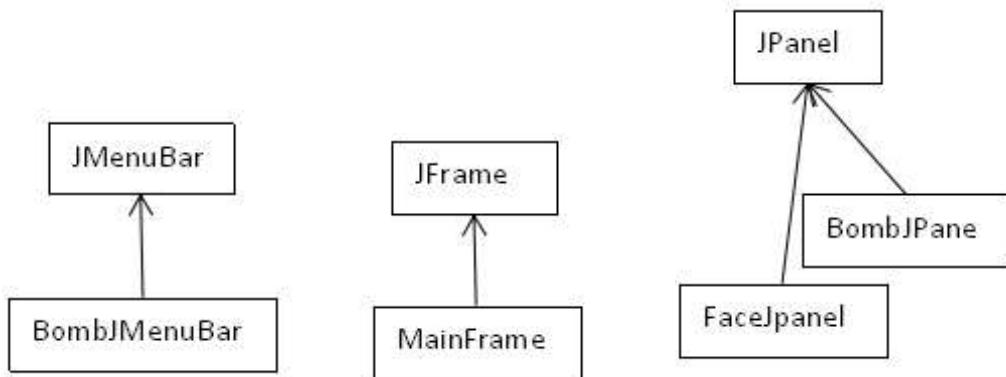
3.1 List of Classes:

- HeroBean
- MineLabel
- BombJMenuBar

- FaceJPanel
- BombJPanel
- AboutSweeping
- HeroDialog
- UserDefinedJDialog
- LayBomb
- Listener
- UserDefinedListener
- TimerListener
- StaticTool
- MainFrame

3.2 Class Relationships:





3.3 Class Detail

class name:	HeroBean
Responsibilities:	To maintain the Hero's name and time record. (Hero is equal to the winner.)
Collaborators:	N/A
Data Structures:	<ul style="list-style-type: none"> - private int time - private String name
Methods:	<ul style="list-style-type: none"> - public HeroBean(int time, String name) - public int getTime() - public void setTime(int time) - public String getName() - public void setName(String name) - public int compareTo(HeroBean o) - public String toString()

class name:	MineLabel
Responsibilities:	Marking the mines with labels.
Collaborators:	javax.swing.JLabel
Data Structures:	<ul style="list-style-type: none"> - private boolean mineTag

	<ul style="list-style-type: none"> - private boolean expendTag - private boolean flagTag - private int rowx - private int coly - private int counAround - private int rightClickCount
Methods:	<ul style="list-style-type: none"> - public MineLabel(int x, int y) - public boolean isMineTag() - public void setMineTag(boolean mineTag) - public boolean isExpendTag() - public void setExpendTag(boolean expendTag) - public int getRowx() - public void setRowx(int rowx) - public int getColy() - public void setColy(int coly) - public int getCounAround() - public void setCounAround(int counAround) - public int getRightClickCount() - public void setRightClickCount(int rightClickCount)

class name:	BombJMenuBar
Responsibilities:	Provides 4 difficulty options to players.
Collaborators:	<ul style="list-style-type: none"> - AboutSweeping - "About" GUI dialog window. - HeroDialog - "Hero List" GUI dialog window. - UserDefinedJDialog - GUI dialog window to custom game mode. - StaticTool - Game statistics tools - MainFrame - To start the game - javax.swing.JFrame

	<ul style="list-style-type: none"> - javax.swing.JMenu - javax.swing.JMenuBar - javax.swing.JMenuItem - java.awt.event.ActionEvent - java.awt.event.ActionListener
Data Structures:	<ul style="list-style-type: none"> - JMenu menuGame - JMenu menuHelp - JMenuItem menuItemStart - JMenuItem menuItemC - JMenuItem menuItemZ - JMenuItem menuItemG - JMenu menuHero - JMenuItem menuHeroZ - JMenuItem menuHeroZ - JMenuItem menuHeroG - JMenuItem menuItemCustom - JMenuItem menuItemExit - JMenuItem menuItemAbout - MainFrame mainFrame
Methods:	<ul style="list-style-type: none"> - public BombJMenuBar(MainFrame mainFrame) - private void init()

class name:	Face JPanel
Responsibilities:	Set thr main interface.
Collaborators:	<ul style="list-style-type: none"> - StaticTool - Game statistics tools - MainFrame - To start the game - javax.swing.BorderFactory - javax.swing.Box - javax.swingBoxLayout

	<ul style="list-style-type: none"> - javax.swing.Icon - javax.swing.ImageIcon - javax.swing.JLabel - javax.swing.JPanel - javax.swing.border.Border - java.awt.BorderLayout; - java.awt.Color - java.awt.event.InputEvent - java.awt.event.MouseAdapter - java.awt.event.MouseEvent;
Data Structures:	<ul style="list-style-type: none"> - private JLabel labelCountG - private JLabel labelCountS - private JLabel labelCountB - private JLabel labelTimeG - private JLabel labelTimeS - private JLabel labelTimeB - private JLabel labelFace - MainFrame mainFrame
Methods:	<ul style="list-style-type: none"> - public FaceJPanel(MainFrame frame) - private void init() - public JLabel getLabelFace() - public void setTime(int count) - public void setNumber(int count)

class name:	Bomb JPanel
Responsibilities:	Set the interface of bombs.
Collaborators:	<ul style="list-style-type: none"> - StaticTool - Game statistics tools - MineLabel - Marking the mines with labels. - Listener - Actions listener for player.

	<ul style="list-style-type: none"> - MainFrame - To start the game - java.awt.Color - java.awt.GridLayout; - javax.swing.BorderFactory - javax.swing.JPanel - javax.swing.border.Border
Data Structures:	<ul style="list-style-type: none"> - MineLabel[][] labels - private Listener listener - private MainFrame mainFrame
Methods:	<ul style="list-style-type: none"> - public BombJPanel(MainFrame mainFrame) - private void init()

class name:	AboutSweeping
Responsibilities:	"About" GUI dialog window.
Collaborators:	<ul style="list-style-type: none"> - StaticTool - Game statistics tools - MainFrame - main class and JFrame entry. - java.awt.BorderLayout - java.awt.Dimension - java.awt.FlowLayout - java.awt.event.ActionEvent - java.awt.event.ActionListener - javax.swing.BorderFactory; - javax.swing.Box; - javax.swingBoxLayout; - javax.swing.JButton; - javax.swing.JDialog; - javax.swing.JLabel; - javax.swing.JPanel; - javax.swing.border.Border;

Data Structures:	<ul style="list-style-type: none"> - private JLabel labelIcon - private JLabel labelOne - private JLabel labelFour - private Box boxOne - private Box boxFour - private JPanel panelT - AboutSweeping sweeping
Methods:	<ul style="list-style-type: none"> - public AboutSweeping(MainFrame mainFrame) - private JPanel getPanel()

class name:	HeroDialog
Responsibilities:	"Hero List" GUI dialog window.
Collaborators:	<ul style="list-style-type: none"> - StaticTool - Game statistics tools - HeroBean - Winner information. - MainFrame - main class and JFrame entry. - java.awt.BorderLayout - java.awt.Dimension - javax.swing.JDialog - javax.swing.JPanel - javax.swing.JScrollPane - javax.swing.JTextArea
Data Structures:	<ul style="list-style-type: none"> - private JPanel panel - private int level - JTextArea textArea
Methods:	<ul style="list-style-type: none"> - public HeroDialog(int level, MainFrame mainFrame) - public JPanel getPanel() - private void addMessage()

class name:	UserDefinedJDialog
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Responsibilities:	GUI dialog window to custom game mode.
Collaborators:	<ul style="list-style-type: none"> - StaticTool - Game statistics tools - UserDefinedListener - Listener of user definition. - MainFrame - main class and JFrame entry. - java.util.regex.Matcher - java.util.regex.Pattern - javax.swing.BorderFactory - javax.swing.Box - javax.swing.BoxLayout - javax.swing.JButton - javax.swing.JDialog - javax.swing.JLabel - javax.swing.JPanel - javax.swing.JTextField - javax.swing.border.Border - java.awt.BorderLayout - java.awt.Color - java.awt.Dimension - java.awt.Font - java.awt.GridLayout - java.awt.Insets - java.awt.event.KeyEvent - java.awt.event.KeyListener - java.awt.event.WindowAdapter - java.awt.event.WindowEvent
Data Structures:	<ul style="list-style-type: none"> - private JLabel jLabelHigh - private JLabel jLabelWide - private JLabel jLabelBomb - private JLabel jLabelMessage

	<ul style="list-style-type: none"> - private JTextField jTextFieldHigh - private JTextField jTextFieldWide - private JTextField jTextFieldBomb - private JPanel panel - private JButton buttonSure - private JButton buttonCancer - MainFrame mainFrame
Methods:	<ul style="list-style-type: none"> - public UserDefinedJDialog(final MainFrame mainFrame) - public JPanel getPanel() - public JTextField getjTextFieldHigh() - public JTextField getjTextFieldWide() - public JTextField getjTextFieldBomb() - public JButton getButtonSure() - public JButton getButtonCancer()

class name:	LayBomb
Responsibilities:	Lay Bombs randomly, init the game.
Collaborators:	<ul style="list-style-type: none"> - MineLabel - Marking the mines with labels. - java.util.Random
Data Structures:	- N/A
Methods:	<ul style="list-style-type: none"> - public static void lay(MineLabel[][] lable, int row, int col) - public static void computeBomb(MineLabel lable[][])

class name:	Listener
Responsibilities:	Actions listener for player.
Collaborators:	<ul style="list-style-type: none"> - StaticTool - Game statistics tools - HeroBean - Winner information. - MineLabel - Marking the mines with labels. - LayBomb - Lay Bombs randomly, init the game.

	<ul style="list-style-type: none"> - UserDefinedListener - Listener of user definition. - MainFrame - main class and JFrame entry. - java.awt.event.InputEvent - java.awt.event.MouseEvent - java.awt.event.MouseListener - javax.swing.JOptionPane
Data Structures:	<ul style="list-style-type: none"> - private boolean isDoublePress - MineLabel[][][] mineLabel - MainFrame mainFrame
Methods:	<ul style="list-style-type: none"> - public Listener(MineLabel[][][] mineLabel, MainFrame mainFrame) - public void mouseClicked(MouseEvent e) - public void mouseEntered(MouseEvent e) - public void mouseExited(MouseEvent e) - public void mousePressed(MouseEvent e) - public void mouseReleased(MouseEvent e) - private void bombAction(int row, int col) - private void expand(int x, int y) - private void backIcon(int i, int j) - private boolean equals(int i, int j) - private void doublePress(int i, int j) - private void doubleExpand(int i, int j) - private void isWin()

class name:	UserDefinedListener
Responsibilities:	Listener of user definition.
Collaborators:	<ul style="list-style-type: none"> - StaticTool - Game statistics tools - UserDefinedDialog - To custom game mode. - MainFrame - main class and JFrame entry.

	<ul style="list-style-type: none"> - java.awt.event.ActionEvent - java.awt.event.ActionListener - java.util.regex.Matcher - java.util.regex.Pattern
Data Structures:	<ul style="list-style-type: none"> - UserDefinedJDialog userDefinedJDialog - MainFrame mainFrame
Methods:	<ul style="list-style-type: none"> - public UserDefinedListener(UserDefinedJDialog userDefinedJDialog, MainFrame mainFrame) - public void actionPerformed(ActionEvent e)

class name:	TimerListener
Responsibilities:	Recording time of game.
Collaborators:	<ul style="list-style-type: none"> - StaticTool - Game statistics tools - MainFrame - To start the game - java.awt.event.ActionEvent - java.awt.event.ActionListener
Data Structures:	<ul style="list-style-type: none"> - MainFrame mainFrame
Methods:	<ul style="list-style-type: none"> - public TimerListener(MainFrame mainFrame) - public void actionPerformed(ActionEvent e)

class name:	StaticTool
Responsibilities:	Game statistics tools.
Collaborators:	<ul style="list-style-type: none"> - HeroBean - Winner information. - java.util.TreeSet - javax.swing.Icon - javax.swing.ImageIcon
Data Structures:	<ul style="list-style-type: none"> - public static int allcount - public static int allcol - public static int allrow

	<ul style="list-style-type: none"> - public static int timecount - public static int bombCount - public static boolean isStart - public static Icon[] num - public static Icon[] time - public static ImageIcon imageIcon - public static Icon iconBlank - public static Icon bloodIcon - public static Icon icon0 - public static Icon clickIcon - public static Icon smileIcon - public static Icon faultFacelIcon - public static Icon winFacelIcon - public static Icon flagIcon - public static Icon askIcon - public static Icon askPressIcon - public static Icon downSmileIcon - public static Icon errorBombIcon - public static Icon blackBombIcon - public static TreeSet<HeroBean> treeSetC - public static TreeSet<HeroBean> treeSetZ - public static TreeSet<HeroBean> treeSetG
Methods:	<ul style="list-style-type: none"> - public static int getLevel()

class name:	MainFrame
Responsibilities:	Launch the program with GUI.
Collaborators:	<ul style="list-style-type: none"> - BombJMenuBar - Provides 4 difficulty options to players - BombJPanel - Set the interface of bombs. - FaceJPanel - Set the main interface.