JAVA UI DESIGNER

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ABSTRACT

In this paper we discuss suitability of using a java UI designer, for overcoming the java User Interface Designing Problem. The current available softwares for Java UI design are complex in nature. Moreover these softwares are also heavy in nature viz. they consume a lot of system resources and thereby run slower. Java UI Designer is an environment where one can use any component available in java and can easily put it on to a frame by simple drag-n-drop. Java UI Designer is developed purely in swings or rather you can say that it is as light weight as swings. It is beneficial for rapid application development viz. the applications which are to be developed in java save time in UI making. In this paper, we discuss about the Java UI Designer application, which provides us with database connectivity, visual assistance and templates which boost up java application development process.

General Terms

Java, Swings

Keywords

Swings, Position Detection, Java UI designer, Database connectivity.

1. INTRODUCTION

Today convergence rules the IT industry and computer users are very creative in making use of powerful applications to affect almost every aspect of life. The concept of context awareness originally stems from the research of human-computer interaction (HCI). One of the objectives in HCI research is to design computer interfaces that reduce user intervention while providing more relevant functions/services to the user. Obviously, a fixed set of context notions has very limited success in learning the java language and computer user's intention under various scenarios.

In this dissertation, the java and computer use is examined and studied focusing on the user-centered approach. This approach is attempt at exploiting the information environment to suit specific user needs. Context awareness therefore can be viewed as a facilitator for java users who seek to reduce human interaction and improved UI making process. [1]

The main reason to discuss in this paper is about a system which reduces the manual work and silly mistakes done while doing UI using java language. [1]

Now a day's java is very popular language and because of its certain unique features it gets used widely. Also x-applet also known as swing provides very powerful sets which can provide better functionalities in java application.

Traditionally java developers while designing UI, first visualize the position of component by giving its location in pixels and then check it by executing it. So this becomes very time consuming and work is needed to be done by trial and error method.

This paper investigates and reports the experience of developing the projects based on Java to java application developers in industry.

2. Java Designer

Unlike application development environments like Visual

Basic, .NET, the java UI designer comes along with components and working area where components are to be placed. While placing the components, their tracking positions, properties, sizes and events are maintained.

Moreover the use of swings, provides us with powerful features such as light weightiness, platform compatibility and small size [2]. Hence java designer is completely built on swings. Following are some of the features of swing and java that we have used.

- **File chooser:** We can save our file anywhere in directory no need to compulsorily save it in bin directory of java while executing. By setting class path to bin directory from java designer we can directly compile and execute the code (User Interface) from java designer [3].
- **Glass Pane:** It's a special container in swings, which acts like a glass [4]. Glass pane enables user to place component on container with repositioning facility, handles mouse events and detects current mouse position. So it's easier to place and reposition components on panel.
- **JDBC:** To do database related applications JDBC allows us to get connected to database of various types [5].
- **Mouse Listeners:** To handle mouse events as well as to keep track of current position of cursor, and location of

any component, here we need mouse listeners [6].

- **Keyboard Listeners:** To update properties of any component, we need to give input via keyboard, so here we need keyboard listeners [6].

2.1 Working of Java UI Designer

Following diagram gives us brief working of java designer.
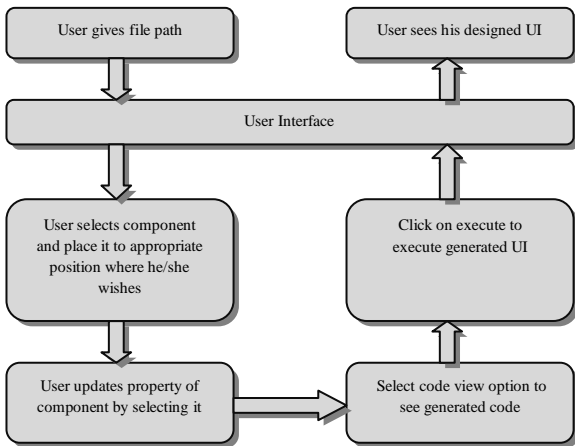

Fig. 1: Working of Java Designer

As shown in above fig., we get a brief idea how java designer works.

First user gives file path in directory where user wishes to save his file. So he can give file path from java designer UI. After creating of file user can generate UI as per his wish or can select from template provided in java designer. After that step, user can update properties of components if he wishes. So all this tasks are done by user.

Now in next phase, user can compile code by code view button also he can see generated code as well. Next to execute the file from given directory, he can click execute button and can execute code. This all things are happening on same java designer UI. Now user can see his UI after execution. This all tasks are done by java designer.

2.2 Important features of Java UI Designer

An important advantage of java UI designer is that, a user who doesn't know much about java can easily generate java UI. This not only reduces time but also reduces the cost of application which gets raised by UI development in java. Java Designer strictly uses swing set so can give all properties of swings. Few important features are listed below:-

- Designing of interface like VB.
- Visual assist.
- Template for boost up speed of UI development more.
- JDBC direct connectivity.
- Generation of code in well parenthesis format which is readable.
- Execution of code from any path into the directory where user need not to set class path.
- Platform independent.
- Easily used by naïve users.
- Completely error free.

- Lightweight.
- More secure as file do not get corrupted by viruses or any external entity.
- Very low utilization of system files.
- Fast performance.
- Easily upgradable.
- Event to any components gets easily added and can be coded easily too.
- Quick Updating properties of any component by just selecting it.

3. Previous work done on Java IDE

Now as java is purely object oriented platform independent language, many programmer wishes to develop an application in java.

So to boost up speed, various java environments are developed we called them as Java IDE [7].

Some of them are listed below

- Eclipse IDE: It's a open source java IDE which provides all libraries of java and applet

- Net beans: It's a java IDE having built in templates for applets and swings but little heavy to system.

- JCreater: A powerful kit to develop an application and can open any java file without having workspace.

Now all of us should be note that Java Designer is not an IDE fir java. It's a designer of User Interface in java which helps other IDE to develop UI rapidly.

3.1 Difference in existing system and Java UI Designer

Table 1. Difference between Existing System and Java UI Designer

Parameter	Existing System	Java UI Designer
Automation	Less	Full
Human interaction	High	Moderate
Security	Low	High
Usability	Less	High
Platform dependency	Full	Independent
Possibility of errors	Less	No
Use of libraries	Complete Java	Swings
JBDC connectivity	Little Difficult	Easy
Support for Execution of non GUI i.e. command line programs	Yes	No

3.2 Use of Java UI Designer for Student

Until now we discussed the use of Java Designer by Java developers, but Java Designer can be used by Student for their

academic purpose. So students can use this application for completing their assignments provided by respective faculty.

Viz. students can complete their mini projects, assignments, Home works as early as possible. So that syllabus can get covered easily and student can gain more knowledge from faculty in same time.

Here it reduces the time of student for developing User Interface requires for developing their mini project.

4. Java Designer in action

Let us have a look on java designer UI and its working with detailed description so that it will get easier to know more about Java Designer.
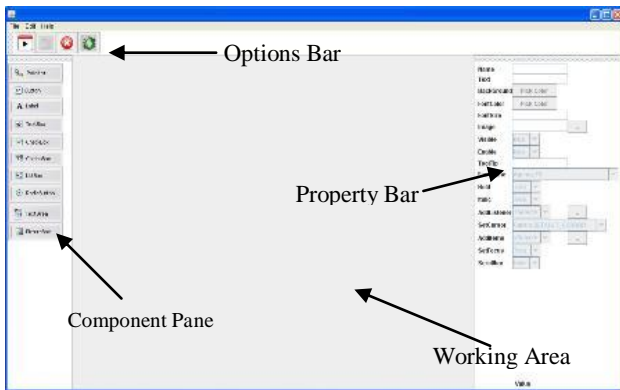
Fig. 2 Java Designer

As shown in the fig, the designer screen is divided into 6 different parts listed below:-

   1. Options Bar
   2. Component Pane
   3. Property Bar
   4. Working Area
   5. JDBC
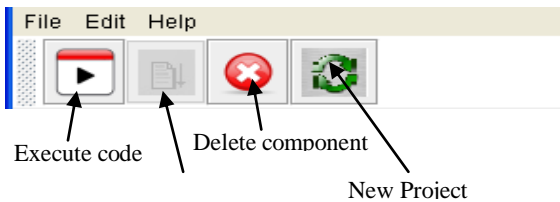   6. Templates
   7. Add Listeners

4.1 Options bar:

Fig. 3 Options bar

Now let us discuss each part in detail:

The options bar consists of Menu items which give little help like Choose your file path, editing tools, etc. And the buttons provided gives some extra features

- **Execute Code:** It directly executes code. But before executing code we must compile the code, otherwise it will not get executed.
- **Compile Code:** It compiles the designed UI, generate java code respective UI and generates class file of generated code in given directory. It also shows java

code in well parenthesis format so that it can be easily read.

- **Delete Component:** It deletes unwanted component from UI which is designed by user. Note that this delete
- **New Project:** If user wishes to have new project in another work space so he can directly go for this button and can start new project in new work area.

4.2 Component Pane:

In Component pane we can see the component available with java. So user just needs to select component and drag it on working area at appropriate location.
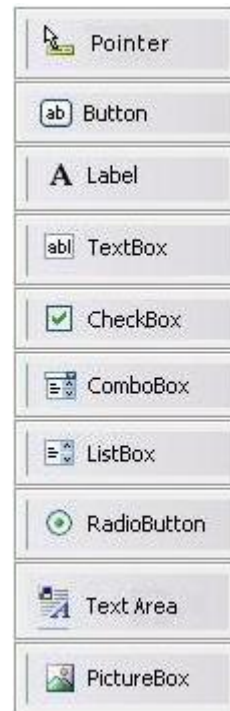
So the fig. can give us brief idea about component pane.

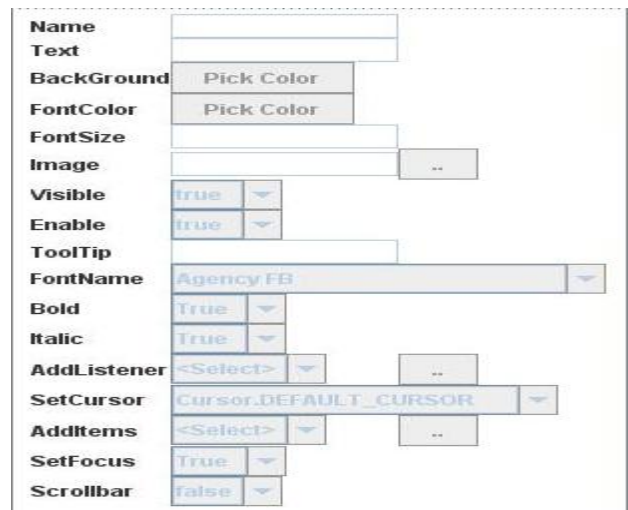**Fig. 4 Component Pane**

4.3 Property Bar:

Fig. 5 Property Bar

In property bar, we can set property of selected component. The property bar has special facility that it only enables the property of related component.

E.g. button does not require Scrollbar property so this property is not getting enabled when we select button.

As java is truly object oriented, it gets easier to have all types of properties so we can get only available properties enabled in this bar.

4.4 Working Area:

In this area we can actually design UI as we wish. So here just we need to select component from component pane and drag it to work area and again by selecting it, we can change its properties from property bar and can see immediately changes to component.

Here working area is completely made up of container pane and glass pane. Container pane allows us to put our components on frame, at the same time glass pane allows to handle mouse events and listeners. So with glass pane we can drag component and can place to anywhere on work area. So it automatically keeps track of component, its location and its dimension. When we put our component on container pane, it actually get put on glass pane and during generating code, it gets placed on container pane.

4.5 JDBC:

Java U.I designer allows us to connect to several multiple databases in an application. User just needs to provide database type and database path if necessary (in case of access). Code for the database connectivity is automatically generated on the background side.

In java while creating type1 driver for a database it is required to give DSN (Data Source Name). In this system there is no need to give the DSN all the tasks are handled by the system itself. Thus manual work is reduced and silly mistakes are avoided.

A same connection string can be used to access different databases. Thus space complexity is reduced

Only the components which can be bound with the database (list box, combo box etc.) are accessible while creating a connection string.
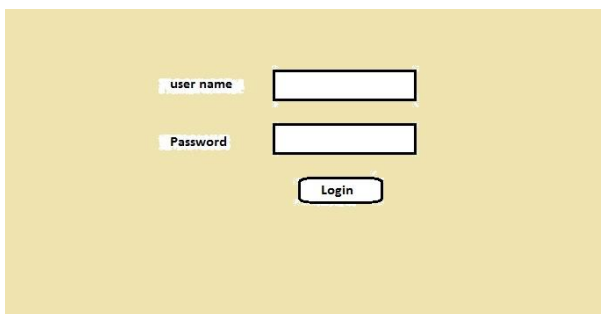
4.6 Templates:

Fig. 6 Templates

Above figure show us the basic login form template

Most of the daily use software and websites have a standardized set of forms. Thus we have included these types of forms in the Java U.I Designer. We have provided provisions so that changes to the templates can be easily made by the user according to his or her needs.

The readymade templates further boost up the development process.

4.7 Add Listeners:

Listeners are widely used in the development phase of java. Without listeners it is not possible to develop even a single application. So we have developed our system in such a way that listeners can be easily assigned to the components.

Using our system the programmers only need to code for the particular component they intend to use, there is no need to keep a track of all the components while coding.

5. EVALUATIONS AND PROBLEMS IN JAVA DESIGNER

Because of difficulty in designing in java UI designing it is not used in rapid application for development (RAD), Java designer can help us to design UI and can also use in RAD. So we can add all events, JDBC all 4 type drivers' connectivity, automatic database query generation.

But in Java Designer we can't do java programming i.e. non GUI based programs as Java Designer is not an editor.

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7. CONCLUSION

The situation of making UI more rapidly and friendly in java swing becomes easier and fast in java designer which develops UI more conveniently by generating code in well parenthesis format which is easy to understand and easy to code in future.

In java designer, the java swing components are placed on frame. The frame uses normal java compiler rather applet requires applet viewer in which we need to give parameters in HTML tags which is quite complicated task.

Also in java designer we can able to store code where we wish and can able to execute code from there unlike other tools do. We need no copy our java file in bin directory of java for execution.

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