Aura

A Multi-Featured Programming Framework in Python

Anshul K. Jain

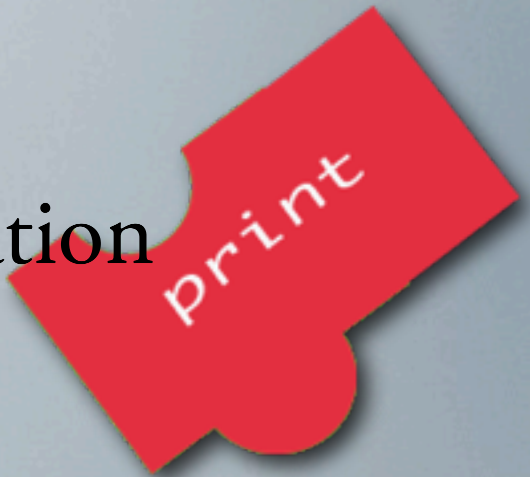
AGENDA

- Introduction
- Aura
- Aura: Elements
- Framework
- UI Design
- Aura: Assembly
- Aura: Future

INTRODUCTION

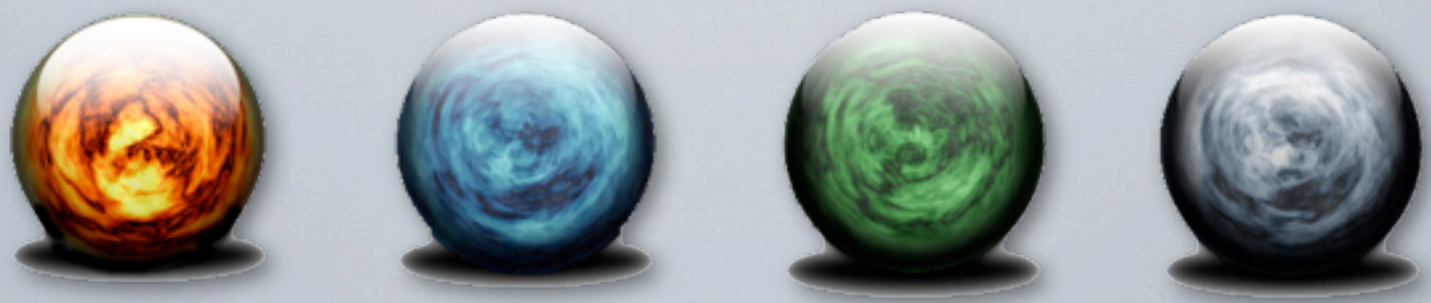
- Educational softwares have played a pivotal role in imparting education through technology.
- Evolution in the field of teaching algorithms and programming needed.
- Large Volume of text reading involved to learn languages.
- Little stress on algorithm building and application.
- Interesting applications those entice learners should be built.

AURA- FUN WAY TO PROGRAMMING



- Research project ‘Aura’ is an educational GUI application designed to teach programming to an apprentice.
- Platform to learn different programming languages using the same software.
- Effective educational tool for young programmers.
- Jigsaw puzzle inspired programming structure.

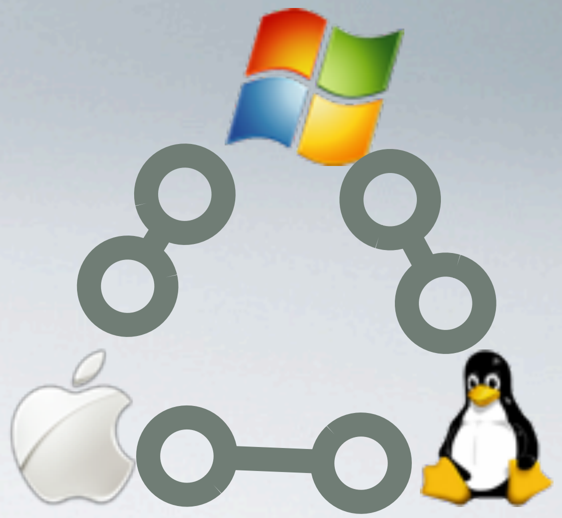
ELEMENTS OF AURA

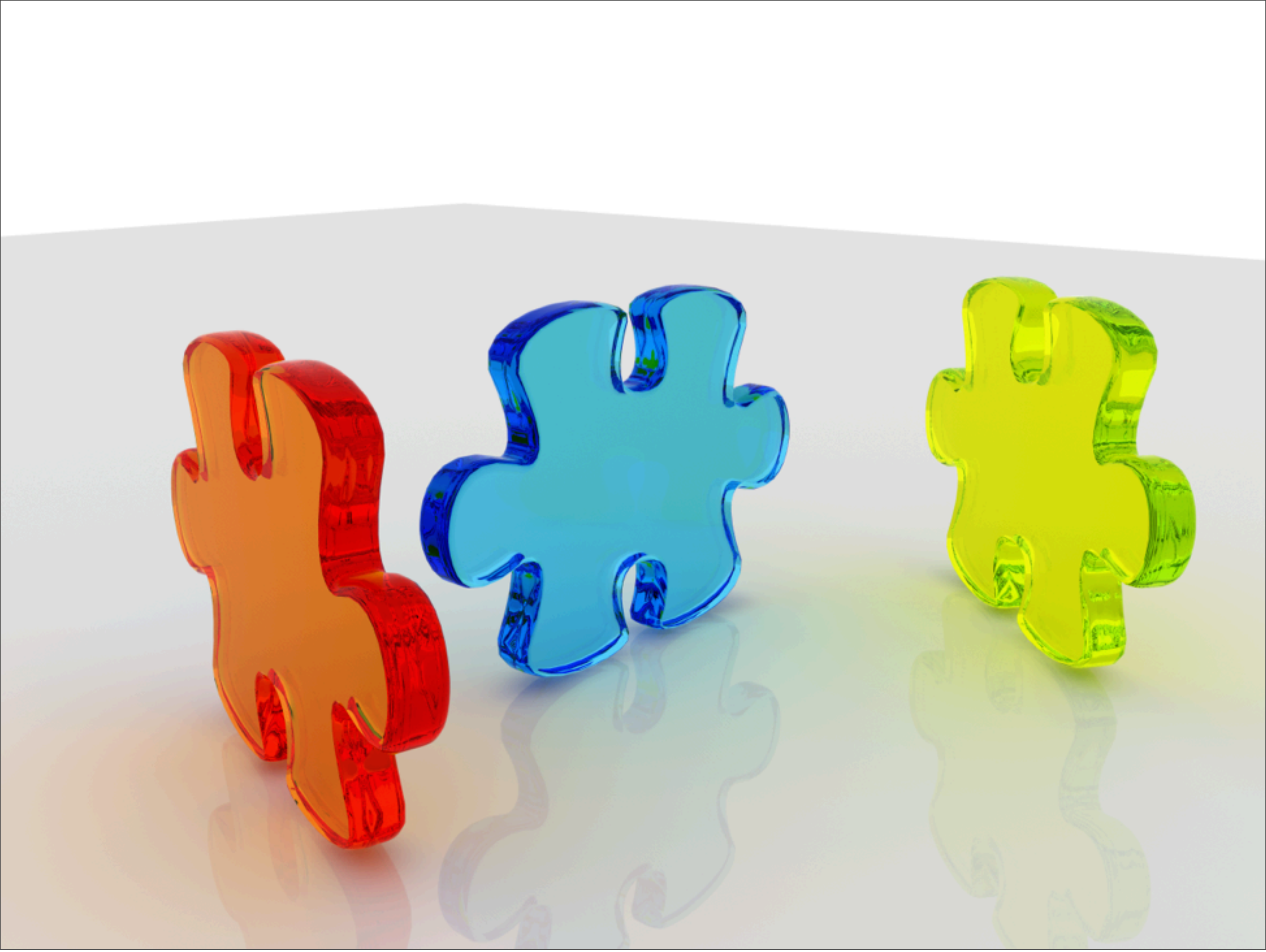


- Interchangeable programming modules
- Universal language teaching approach
- Block combination interface
- Web Browser
- RPC based Networking

FRAMEWORK RUNDOWN

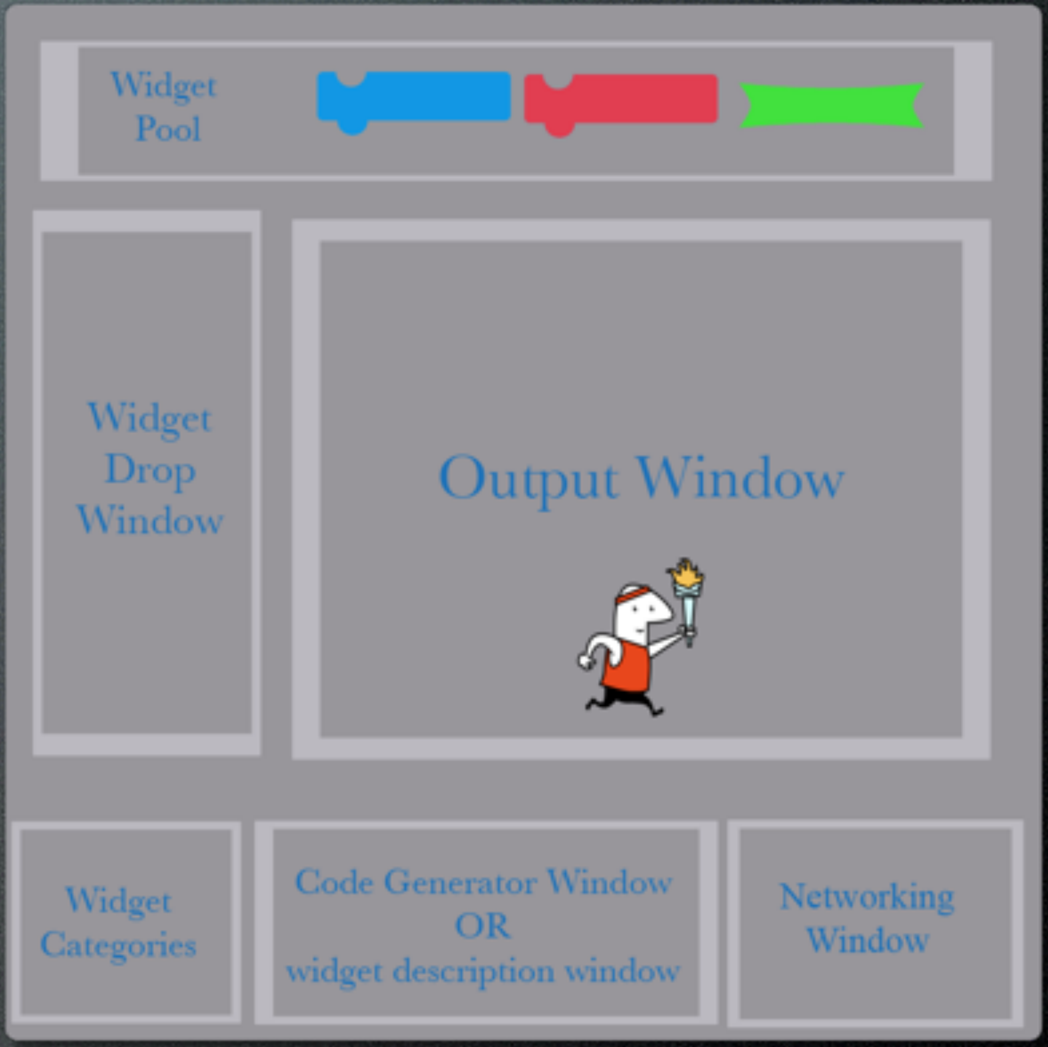
- Python
- Qt
- PyQt





UI- an Astute Design

- Modules organized as widgets placed category wise.
- A drag-drop widget pool.
- Widget drop window.
- Output window
- Widget description window.



Widget Pool

Widget Drop Window

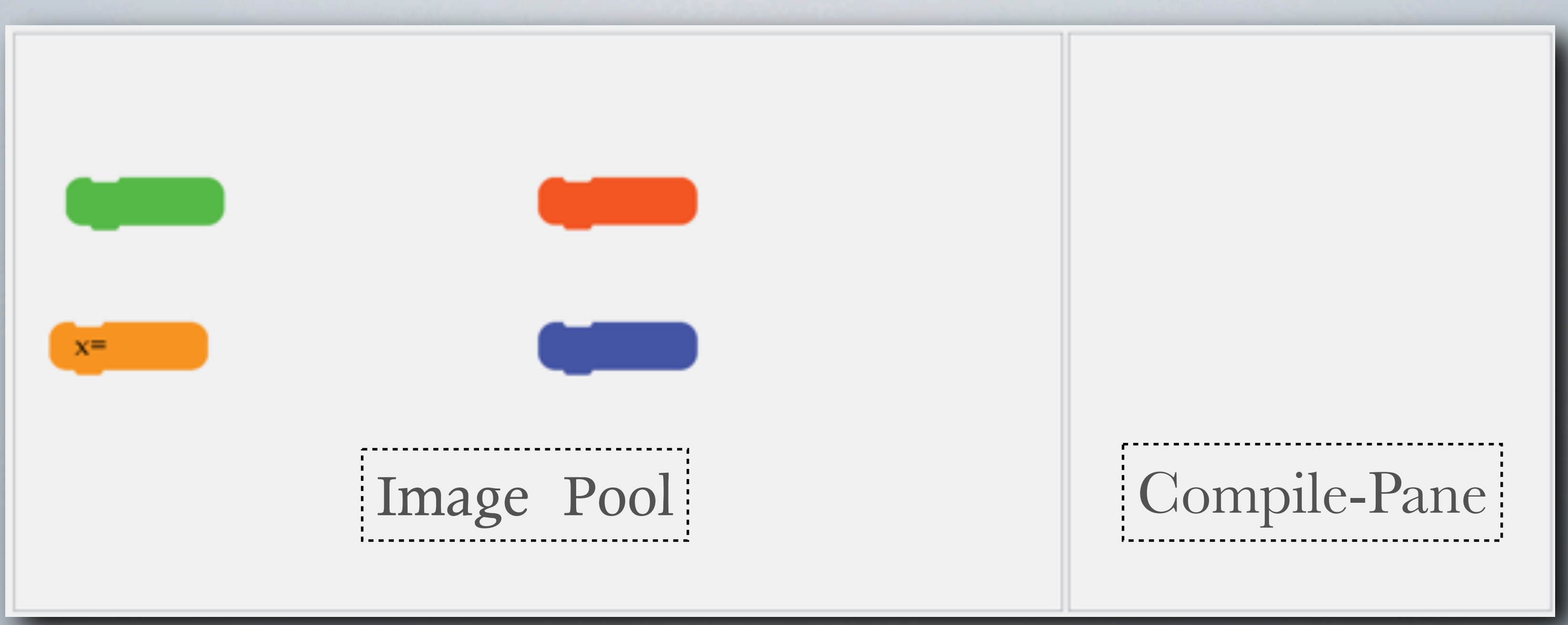
Output Window

Widget Categories

Code Generator Window
OR
widget description window

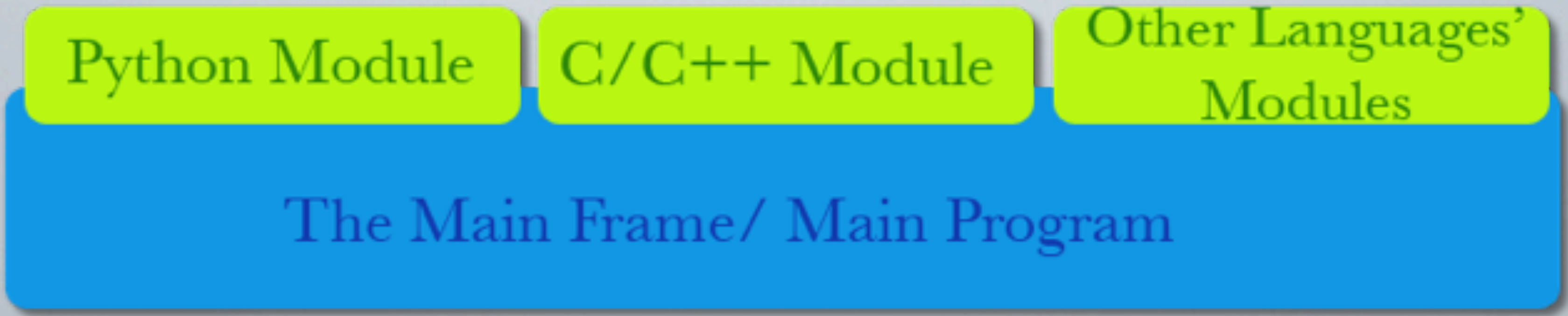
Networking Window

DRAG AND DROP



- Student can select an image.
- Click in compile-pane to drop the image.
- Moving around images using simple drag-drop.

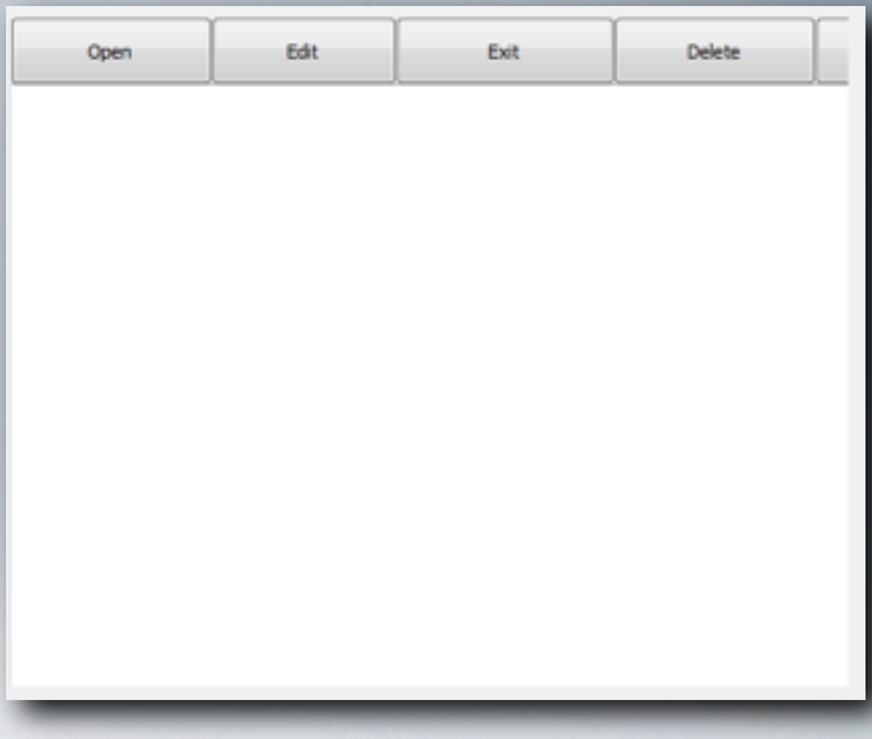
PROGRAMING MODULES



- One basic framework for different languages.
- User editable module.
- Window to display block info in selected programming language.

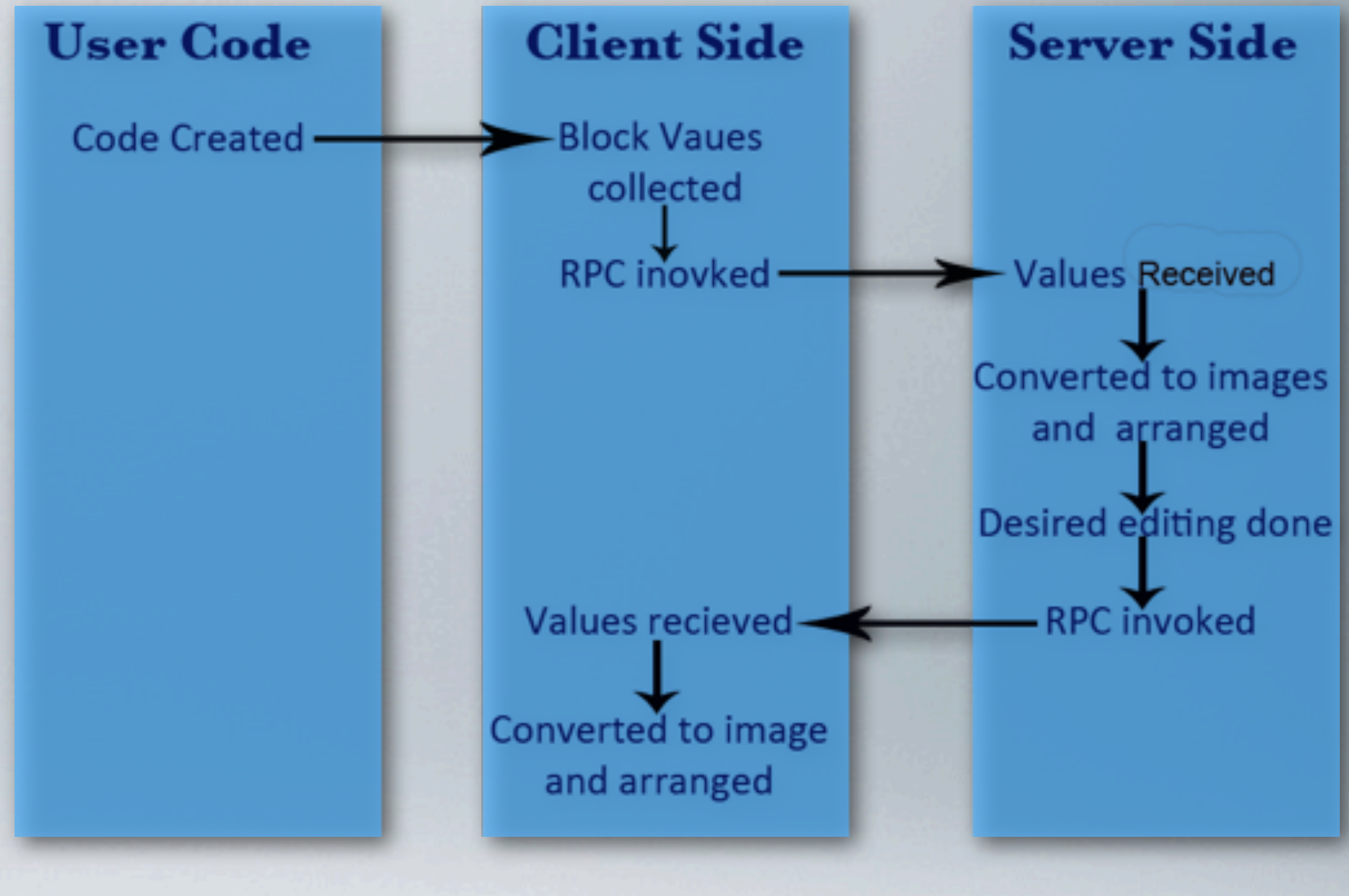
EDITOR WINDOW

- Simple Editor to show block description.
- Easy to edit.
- Can serve as a standalone simple editor too.



COLLABORATION

Sharing using RPC based invocation



Client:

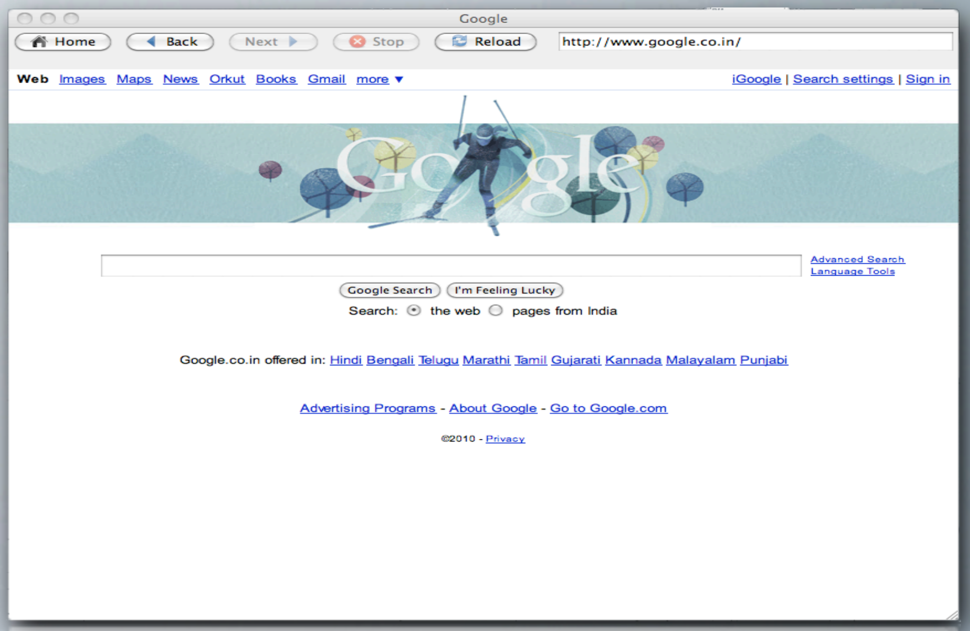
```
def share(self):
        try:
            proxy.create(com.runStk)
```

Server:

```
def create(stk):
        x= len(stk)
        for i in xrange(x):
            self.Icon.append(0)
            self.Icon[self.count] = QtGui.QLabel(self)
            self.Icon[self.count].setPixmap(QtGui.QPixmap(':/images/'+stk[i][0]))
            self.iconBay[self.count]=stk[i][0]
            self.Icon[self.count].move(stk[i][1],stk[i][2])
```

WEB BROWSER

- Faster access to information.
- Students don’t need to leave application.
- Webkit based browser.
- Basic yet fast browser.



http://www.google.co.in/

Search: ● the web ○ pages from India

Google.co.in offered in: Hindi Bengali Telugu Marathi Tamil Gujarati Kannada Malayalam Punjabi

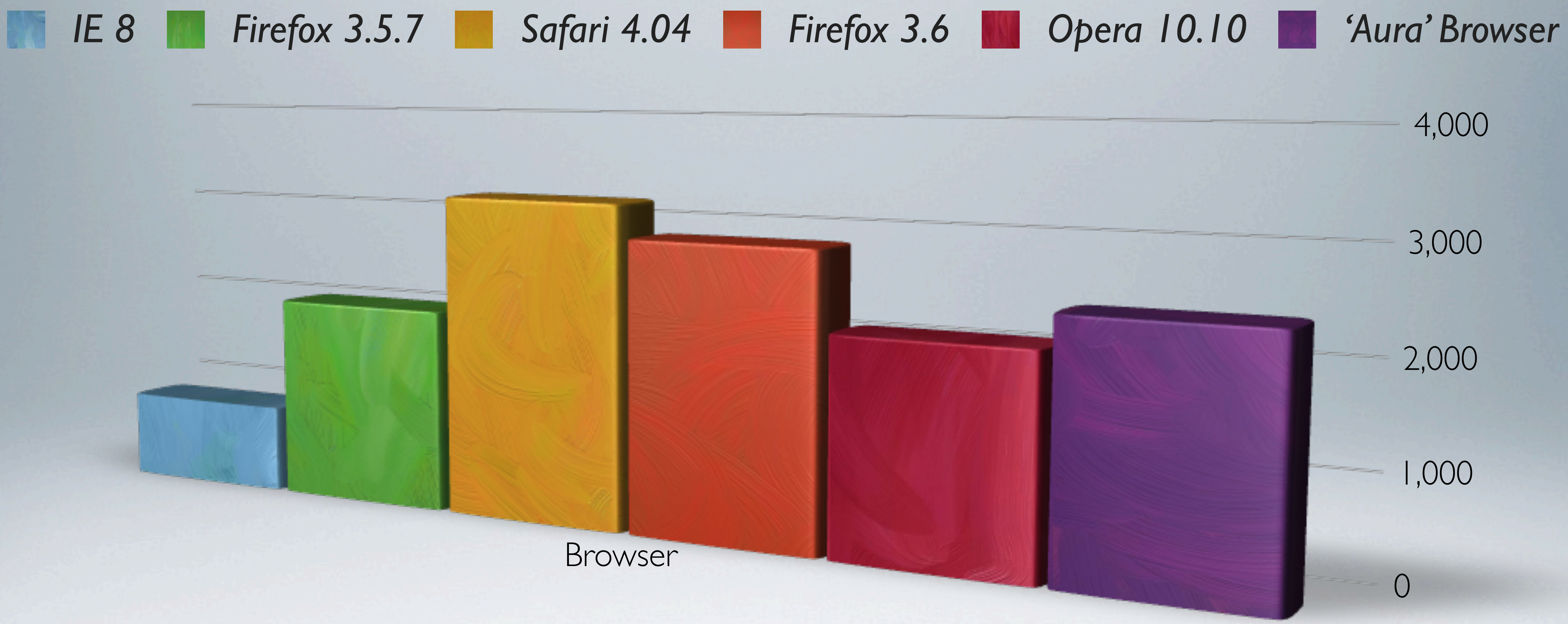
Advertising Programs - About Google - Go to Google.com

©2010 - Privacy

```
SOME FUNCTIONS:

url_changed(self) #Url have been changed by user
stop_page(self)#Stop loading the page
title_changed(self, title) #Web page title changed - change the tab name
reload_page(self) #Reload the web page
link_clicked(self, url) #Update the URL if a link on a web page is clicked
load_progress(self, load) #Page load progress
back(self) #Back button clicked, go one page back
home_page(self) #Home Button, goto home page
next(self) #Next button clicked, go to next page
```

BROWSER BENCHMARK



Browser benchmark scores from Peacekeeper

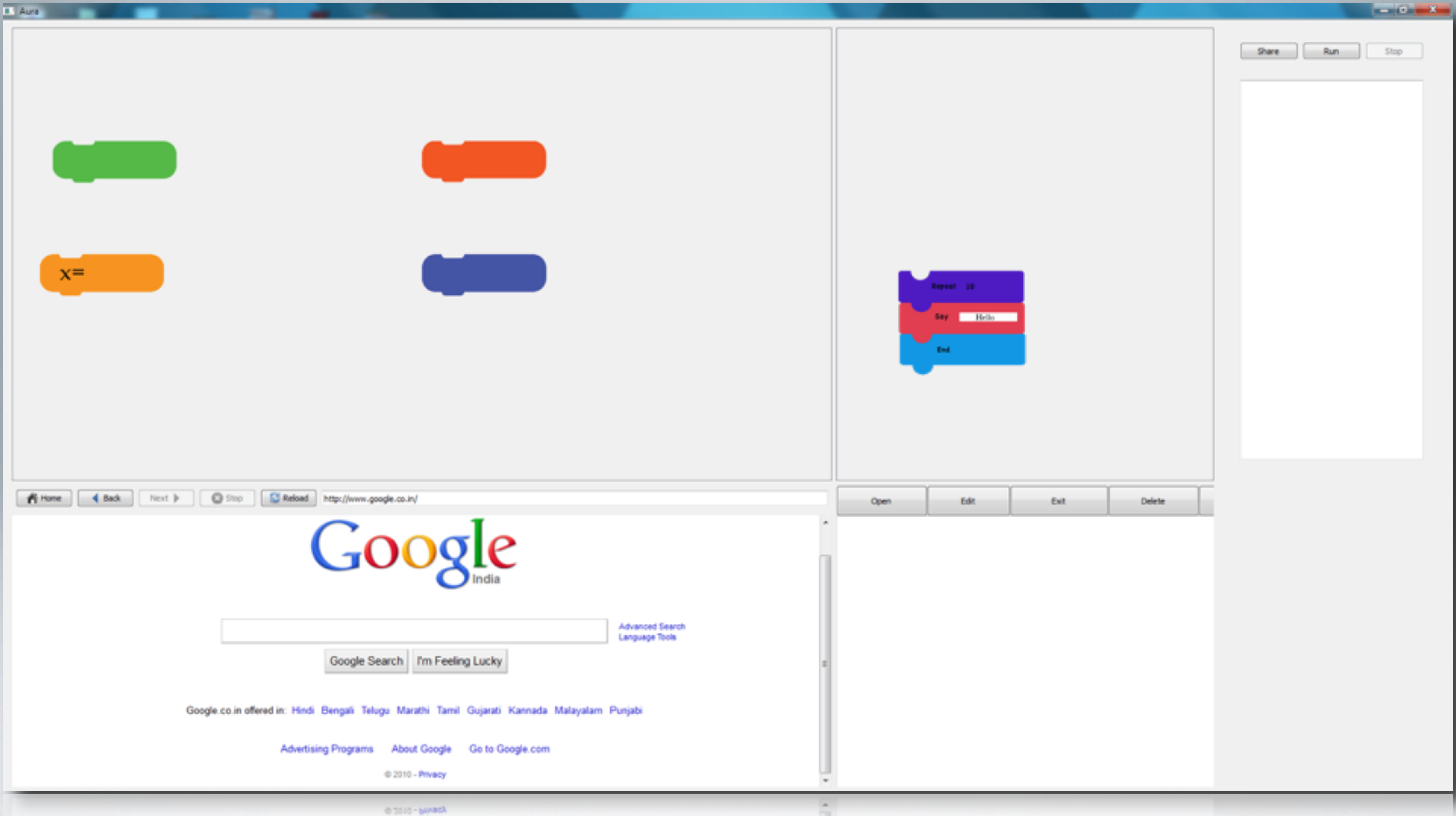
http://service.futuremark.com/peacekeeper/index.action

OUTPUT ASSEMBLY

```
self.key={
        'repeat.png':[1, lambda x: repeat(x)],
        'say.png':[0, lambda self: self.say()]
                        }


def start(self):
        self.ui.stop.setEnabled(True)
        x=len(com.runStk)
        for i in xrange(x):
            self.key[com.runStk[i]][1](self)
```

WORKING


Aura
Share
Run
Stop
x=
Repeat 10
Say
Hello
End
Home
Back
Next
Stop
Reload
http://www.google.co.in/
Open
Edit
Exit
Delete
Google
India
Advanced Search
Language Tools
Google Search
I'm Feeling Lucky
Google.co.in offered in: Hindi Bengali Telugu Marathi Tamil Gujarati Kannada Malayalam Punjabi
Advertising Programs
About Google
Go to Google.com
© 2010 - Privacy

FUTURE APPLICATIONS

- Extensive modification.
- Full scale implementation in schools and colleges.
- Implementation across diverse fields.
- Modular code architecture.
- Students can easily create/manage personal modules.

Thank You