

February 2006

# R-EVOLUTION

Newsletter for the Developer Community

For Private Circulation only



## Editorial

Dear Developers:

By the time you read this issue of R-evolution, the Reliance Infocomm second Mobile Application Contest would be over. Thank you for your enthusiasm and creativity in making the contest a success. We are sure the applications will be appreciated by the judges and millions of Reliance IndiaMobile users after their commercial launch on R World. The number of entries received, given that this year's contest invites only fully developed applications, is highly encouraging. I would like to praise the efforts made by the student community who participated in good numbers in the specially-introduced 'Student' category. As mobile value-added services show increasing uptake in the country, the developer community, especially individuals and students, can hone their skills through contests like these and get a headstart in their endeavor to turn into young entrepreneurs.

The 'Lead Story' in this issue takes game development technicalities for Reliance handsets into the next level from the stage we described in the December 2005 'Lead Story'. Anupam from Tinfo Mobile, a Reliance Developer Programme partner, is leading this initiative and developers would certainly benefit from this tutorial. Continuing with our monthly series on 'Tech Support', this issue dwells on SMS-related aspects. The article discusses SMS APIs on MIDP 2.0 which are now available on the latest Reliance JAVA handsets. This feature will allow developers to switch from Reliance APIs to MIDP 2.0 APIs for all handsets supporting it.

This month saw Reliance Developer programme participate in the SUN Tech Days event in Chennai on Feb 07 and 08, 2006. We are thankful to developers for visiting our stall and providing critical feedback. We will see more participation by Reliance Developer Programme in partners' events to deepen our engagement with the developer community. As usual, we look forward to your feedback.

**Saurabh Chakrabarti**

Reliance Developer Programme team



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## DEVELOPING EXCITING GAMES FOR RELIANCE HANDSETS – 2

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# DEVELOPING EXCITING GAMES FOR RELIANCE HANDSETS – 2



*This article is a continuation of a series of articles contributed by Anupam Varghese of Tinfo Mobile, a Reliance Developer Programme member. The first article appeared in the 'Lead Story' of R-evolution, December 2005.*

Thanks for the response to the part 1 of this article. We look forward to more participation from the developer community who I know is always full of creative and fascinating ideas. We had discussed the starting point and basics of preparing a game's design. Let's continue from there.

## Game components

There are a few game components that every game developer must be familiar with. The first among them is a 'Pixel'. A pixel is simply the smallest distinguishable unit of a screen display. Currently there are no direct techniques to draw less than one pixel on the mobile screen.

The second is a 'Sprite'. I'm not talking about the 'all

taste, no gyan' carbonated drink in a green bottle :-)). A sprite is a transparent image, usually depicting a character or an object in a game. Every character in a game therefore has its set of sprites for each action that is involved. The image containing the set of sprites is usually referred to as the sprite-sheet.

The next component is called a 'Tile'. A tile is conceptually similar to the mosaic or ceramic tiles that might have been used on the floor of your house. A tile is a rectangular (mostly square) piece of the background of a game screen. In other words, a set of tiles arranged as rows and columns make up the background layers of a game.

Why use tiles? Why not have a large image that could be drawn on a screen? Consider a platform adventure game like Ramson's Quest, where the hero has to move across platforms (which are pretty long) to reach some destination point. Assume that the level is currently 100 tiles wide and 15 tiles high. If each tile is 16 x 16 pixel square in size, that

translates to an area of  $100 \times 15 \times 16 \times 16 = 3,84,000$  pixel square. Since every pixel of image space costs two bytes space, this translates to a whopping 750 KB just for the background image.

## Not feasible

This is simply not feasible because:

1. Most devices have a hard limit on the maximum image dimensions. Though there is no hard and fast rule, it would be a safe bet to limit any image within 255 x 255 pixel square size.
2. Most devices do not have a separate image memory and the heap in most devices is restricted to 200 KB. This could vary, but 200 KB is a safe limit.
3. A large image will take a lot of space in the jar file. (A Java application is packaged as a Java Archive file - the same as a compressed zip file and has an extension .jar). The safe limit for the jar size is 64KB (Color) and 32KB (B&W), on the Reliance network.



A small section of a game level from Ramson's Quest 2 © Tinfo Mobile 2006

4. Any game involves a fair amount of interaction between the background and the characters. Having a big image will necessitate getting the pixel data at a given position. For example, Ramson can stand on the grass but has to be hurt by a water-fall. If the image is single piece, the only way to do this would be to get the pixel data at the location where Ramson is situated. But this is not directly possible in MIDP 1.

5. Certain regions in the background need to be animated. For example the waterfall in Ramson's Quest is animated, to make it appear to be flowing. This is not possible with a single background image.

All these reasons effectively rule out the possibility of using a single background image for the entire level. Now let us see how tiles help.

#### How tiles help

A big image can be drawn by using only a handful of small tiles (around 12 of them). To map which tile gets drawn where on the screen, you can use a 'Tile-Map'. A tile map is a one- or two-dimensional array that says which tile is to be drawn at the given location of a map.

The tile-map for the layer (in the diagram) may look like this:

```
0,0,0,0,0,0,0,0,1,0....  
0,0,0,0,0,0,0,0,2,0...  
0,0,0...  
0,0,0...  
4,0,0..  
4,0,0..
```

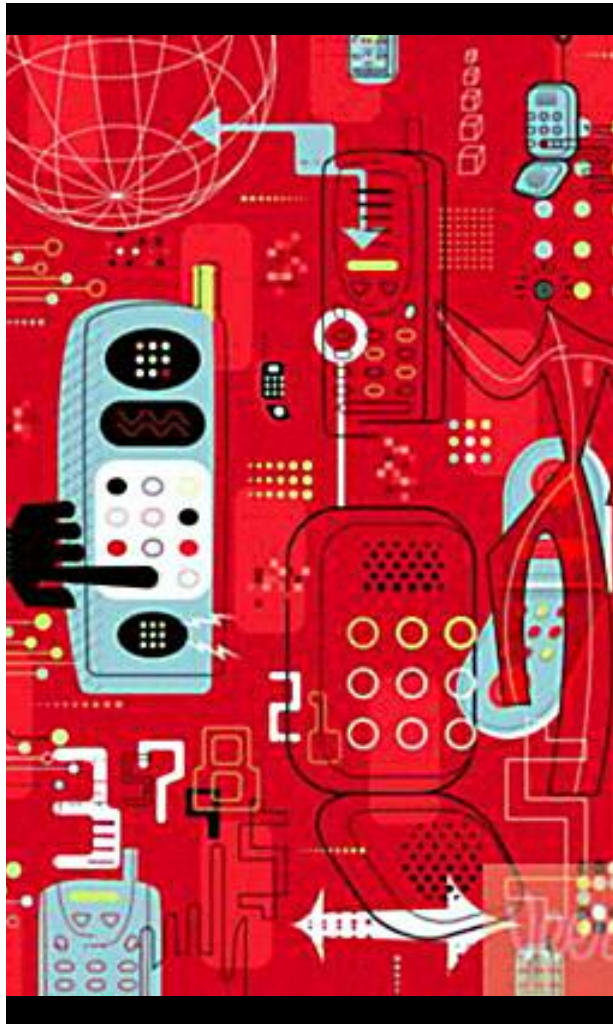
Assume that waterfall tile numbers are 1,2p; blank tiles are 0; and 4 is the wall tile.

I hope you got the picture.

#### The next article

In the next article of the series we'll discuss how a tile-map and tile-sheet (an image containing the set of tiles) can be used to render a background.

As an exercise, Google up the following terms to know more about them: Pixel, Sprite, Tile, Tile-Map, and Tile-Sheet. If you're feeling more enterprising, go ahead and create a tile drawing algorithm.



Meanwhile, the collaborative game project is still going on. If you'd like to contribute, go ahead and send mail right away. Contact Saurabh at [saurabh.chakrabarti@relianceinfo.com](mailto:saurabh.chakrabarti@relianceinfo.com) or me at [anupam@tinfomobile.com](mailto:anupam@tinfomobile.com) for queries or contributions. Your feedback and comments are very welcome.

So friends, till the next article, have fun.

#### About the author



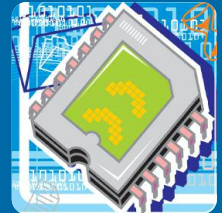
**Anupam Varghese** is Chief Technology Officer at Tinfo Mobile, a Thiruvananthapuram based leading mobile games and applications development company ([www.tinfomobile.com](http://www.tinfomobile.com)).

Anupam co-founded Tinfo Mobile, one of India's earliest mobile entertainment companies with several firsts to its credit.

He has spearheaded pioneering initiatives including developing 'Truck Tycoon' - one of the world's largest strategy mobile game titles, and 'All Minder'- the Reliance Infocomm-NASSCOM award-winning application for the visually impaired.

He has also created unique tools for education on the mobile, and the first mobile game to win an Abby Gold for India's leading automobile manufacturer

# SMS USING WIRELESS MESSAGING APIS (MIDP 2.0)



TECH TIP

Mobile phone network infrastructures provide standard ways to pass text messages between phones. The most well-known mobile phone messaging protocol is SMS (Short Message Service).

The J2ME Wireless Messaging API (WMA) specifies a standard set of APIs that J2ME applications running on SMS-enabled devices can use to communicate with network peers via the SMS protocol. The WMA can be implemented on the Connected Limited Device Configuration (CLDC) for mobile phones and low-end PDAs; and Connected Device Configuration (CDC) for high-end PDA platforms.

Till now we have been using Reliance LOC APIs for sending SMSs, but with the introduction of certain open market handsets which can access R World applications, the focus has shifted to building applications which support MIDP APIs instead of LOC APIs.

The MIDP 2.0 contains an optional package called WMA which can be used for sending SMSs.

Here is detailed information about WMA classes.

Application developers can access WMA features through three top-level interfaces in the `javax.wireless.messaging` package:

- The `Message` interface defines the structure of a message. The `TextMessage` and `BinaryMessage` interfaces are derived from

`Message` and provide more specific message structures.

- The `MessageConnection` interface represents a network connection for messages. It defines basic methods for sending and receiving messages. For example, the `MessageConnection.newMessage ()` method returns `Message` instances for outgoing messages; the `MessageConnection.receive ()` method captures incoming messages.

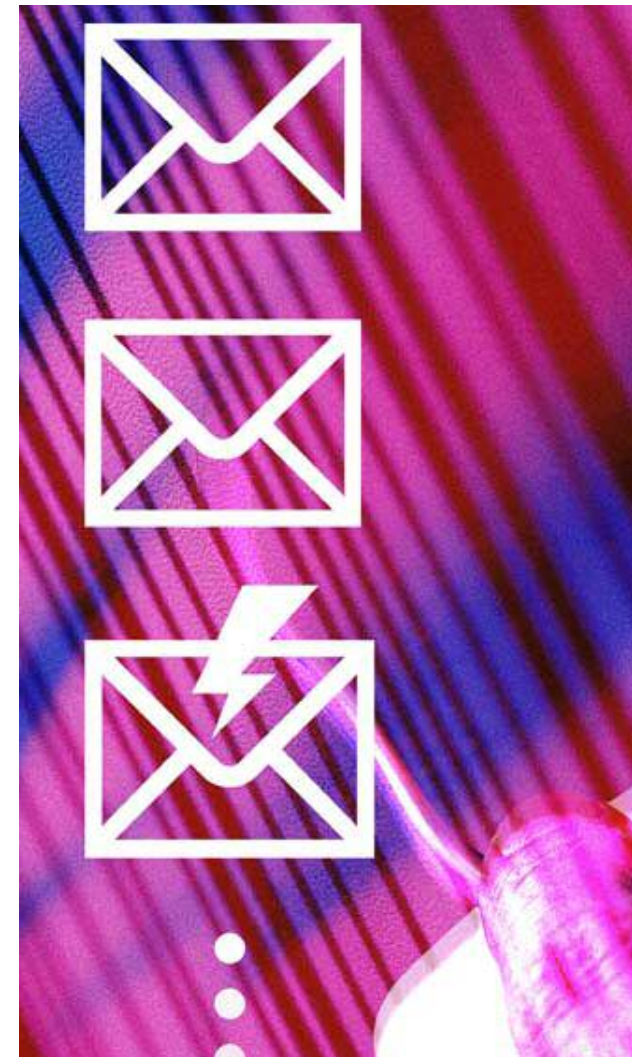
- The `MessageListener` interface has only one method: `notifyIncomingMessage ()`. A `MessageListener` instance is registered with a server `MessageConnection`. Its `notifyIncomingMessage ()` method is called when there is an inbound message.

The specification requires that `notifyIncomingMessage ()` return quickly. Thus, it is not recommended that you process the inbound message within this method.

The Java General Connection Framework (GCF) connector class `javax.microedition.io.Connector` instantiates instances of `MessageConnection`.

The URL that is passed to the `Connector.open ()` method determines the connection that will be opened.

The Implementation of the above will be discussed in the next issue.



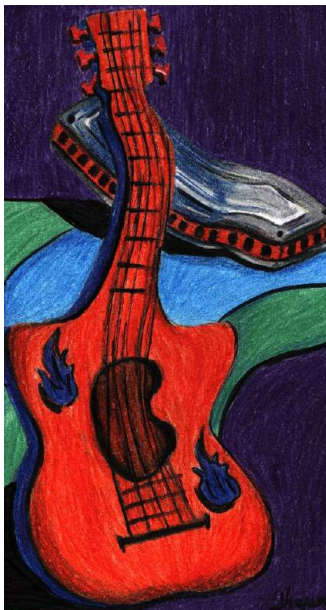


# A ROUNDUP OF RESPONSES

Our technical support team responds to queries posted by developers on the 'Discussion Forum' board of [www.dadp.com](http://www.dadp.com). Here are a few interesting queries along with our responses. We hope you will find them useful.

And if you have a query related to application development for Reliance's network post it on our 'Discussion Forum'. The most constructive query will be published in R-evolution and the sender will receive a surprise gift from us.

## Sound effects



I have been working on sound effects for Reliance-supported devices like LG RD 2030 and LG RD 7130. I want to create two players for two different sound files at the start of an application, so that I can use the two sound files anywhere in the application by simply starting a particular player (i.e. `player.start`). I have only tried creating a single player at runtime. Please advise.

### **Technical Support's response:**

You need not create two players to achieve the above. You have to change the parameter values of the methods. For two different sound files you can send two different parameters whenever you want to use them, and the ones you want to play.

### **Brew Testing**

Can I activate a device on the Reliance network for brew testing? To test a brew application on LGVX6000, can I perform an 'over the air' testing by arranging for a suitable device? The process would connect to server, download images, text, etc.

### **Technical Support's response:**

Qualcomm performs activation of handsets for testing BREW applications. For more information visit the site: <http://brew.qualcomm.com>. We will provide the same facility to Reliance developers soon.

### **J2EE Servlet**

I face a problem when running DOS-based programs and other system utilities with a particular Java programme that should ideally run it along with any other programme. Should I run it by executing - `java Run Notepad / java Run Command.com`?

### **Technical Support's response:**

Try executing the file using the following: `Runtime.getRuntime().exec(file)`

### **Performance of Servlets**

How can I improve the performance of my Servlet?

### **Technical Support's response:**

When writing a service () method for your Servlet, improve performance by using following techniques:

1. Use StringBuffer rather than using a + operator when you concatenate multiple strings
2. Use `print()` method instead of `println()` method
3. Use `ServletOutputStream` instead of `PrintWriter`
4. Initialize the `PrintWriter` with proper size
5. Flush the data partly
6. Minimize amount of code in synchronized block
7. Set the content length

### **Maintaining sessions**

How to use sessions and maintain in application?

### **Technical Support's response:**

Here are few approaches to maintain sessions:

1. `HttpSession` provided by servlet API
2. Hidden fields
3. Cookies
4. URL re-writing
5. Persistent mechanism

### **Tracking sessions**

How can I perform session tracking?

### **Technical Support's response:**

You can use an HTTP session for session tracking. You need to take care of the following points.

1. Remove session explicitly
2. Set session time out value
3. Application server/servlet engine implementation



QUIZ

# BRAINGYM



FEEDBACK

1. What is the ability of a programming language to process objects differently depending on their type called?

- a. Polymorphism
- b. Inheritance
- c. Encapsulation
- d. Abstraction

2. After compiling a midlet, you must process it with a command to ensure that it is valid before it is used by the Kilo Virtual Machine (KVM). What is the name of that command?

- a. midp
- b. javac-bootclasspath
- c. preverify
- d. jar

3. Which of the following techniques can be used for wireless session tracking?

- a. Cookies
- b. URL re-writing
- c. Hidden fields
- d. None of the above

4. Which interface does Hashtable not implement?

- a. Cloneable
- b. Comparable
- c. Map
- d. Serializable

5. What options are available for working with property files that require character encod-

ing other than the default character set?

- a. Pass the encoding name to the load method of Properties
- b. Pass the encoding name to the InputStreamReader constructor and pass that Reader on to the load method of Properties
- c. Pass the encoding name to the constructor call of the Properties object
- d. Use the native2ascii tool to convert property files to other character encoding

Answers: 1. a 2. c 3. e 4. b 5. d

## Monthly poser

Barry Collin, a senior research fellow at the Institute for Security and Intelligence at Stanford University, California, coined a term which is used often in today's computing environment. Name it?

- a. Cyber Terrorism
- b. Cyber Sex
- c. Cyber Vyber
- d. Cyber Cafe

Answer to last month's poser: IIT, Kharagpur  
The winner of last month's poser (through a lucky draw) is Amar K. Singh, Patna.  
Winner will receive prize by courier.

## Letter to Editor

I look forward to benefit from being a part of the Developer Programme and to see others benefit too. I have a few ideas regarding CDMA technology like a SIM-based CDMA connection. I would like to submit my suggestions to your organisation, so let me know how it can be done.

**Prashant Kesarwani**

M.Tech (IT)

Indian Institute of Information Technology  
Allahabad, Uttar Pradesh

Editor: Dear Prashant, thank you for writing to us. We want all members of our developer community to benefit from the programme and that is a prime objective of the community.

We also recommend you to visit [www.dadp.com](http://www.dadp.com) to know more about Reliance Developer Programme. You are welcome to submit your ideas on the Web site or write to us at [dadp.query@relianceinfo.com](mailto:dadp.query@relianceinfo.com)

Answers to the Monthly Poser should be sent to [dadp.newsletter@relianceinfo.com](mailto:dadp.newsletter@relianceinfo.com) mentioning Monthly Poser—February 2006 as the subject with the sender's location stated. The winner will be decided on the basis of a lucky draw and walk away with a prize.

You can contribute ideas and information to R-evolution at the following e-mail address: [dadp.newsletter@relianceinfo.com](mailto:dadp.newsletter@relianceinfo.com). Please note that contributions may be edited for clarity, style or length.

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