

PERFORMANCE ANALYSIS OF SECURE & EFFICIENT REMOTE DESKTOP MANAGER

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Abstract — The development of the research study Remote Desktop Manager is based to understand that how the android based operating system mobiles can access the computer system remotely via internet while providing desktop based work environment independent of any version of computer and android mobile operating system and also study features such as file sharing, screen-share, wake-on-LAN, shutdown, Chat and keyboard and mouse control. The research article consists of two applications which are Mobile and Desktop application. The Mobile application is developed for the android based operating system of mobile phones using Eclipse Integrated Development Environment (IDE) and Android Software Development Kit (SDK) with an Android Development Tools (ADT) plug-in. Different android mobile was used for testing and running the mobile application. The Desktop application is developed for the computer system which acquires necessary information of the user's associated computer system and assists mobile application's features such as file transfer, Notification via SMS, screen-share, wake-on-LAN, Chat and Shutdown

Keywords — *encryption algorithm, remote desktop sharing.*

I. INTRODUCTION

The fundamental reason for the application is to secure remotely get to and control distinctive applications on a PC. An Application goes your portable into a remote control that can control different applications on Desktop PC.

Both the PC and cellular telephone need to bolster Internet Connection which is being utilized to send and get the information.

Numerous remote access applications either give their own particular interface as opposed to showing the remote desktop or experience the ill effects of slacks while showing the mutual/remote screen. Moreover, the nature of the remote desktop showcase is additionally not estimable for a larger part of applications. Our Application is an application that determines this issue by spilling the desktop of a PC.

All from the palm of your hand, Control your PC from your mobile device. Wherever you have Internet Connection, you can remotely control your PC as though you were sitting directly before it .The Thesis is accessing computer via Android phone. The thesis is limited to two devices having Internet Connection at both end for sending and receiving the data. The application should able to share desktop of computer on Android phone. The host allows computer to access file or data remotely.

This segment presents two imperative components of the proposed presentation which are: Client Solicitation and Server Tender. The significant segments of the proposed application and a percentage of the imperative calculation are highlighted in point of interest.

The customer side application created utilizing the Android SDK and introduced on client gadgets as an apk. In light of the stage utilizing Android Software Development unit, this application was composed utilizing the Java Programming Language .This area clarifies how the customer application functions and streams. To start with, the customer application needs to Connect to the Wi-Fi association so it can interface with the server and keep running in parallel When application connect to specified network then it request to server to wake up the system after this client request to database server for screen sharing .

The presentation GUI will then suspect data from the customer. After the movement has been performed, it will send a charge to the server. After it has been taken care of, the server sends back the action to application GUI and redesigns the information back to the customer as anyone

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might expect. The procedure of customer and server must be worked in parallel, in light of the fact that customer won't complete its undertaking if server does not possess an operation.

II. LITERATURE REVIEW

There are very few studies done on this topic previously so I choose this topic for add some more researches and it are also being difficult to find studies on this topic.

a. Team Viewer

Team Viewer is easily distant access software. There are huge amounts of structures, which is constantly extraordinary, but at the same time it's colossally simple to join. No progressions to modification or firewall shapes are required.

With backing for varying media, voice-just, and content visit, Team Viewer likewise permits record exchanges, strengthens wol, and can even tenuously reboot a workstation into Innocent Way and after that re-link actually. [1]

i. Host Side

<http://pcsupport.about.com/od/remote-access/fl/teamviewer-review.htm>

The PC you need to associate with Team Viewer can be a Casings. A full, installable adjustment of Team Viewer is one decision here, and is no doubt the simple win in case you're not certain what to do. A convenient rendition, called Team Viewer Quick Support, is an awesome decision. The third substitute, Team Viewer Host, is the paramount decision on the off chance that you'll be routinely joining with this PC.

ii. Client Side

Team Viewer has various choices for interfacing with the PC you need to resistor. Installable and useful thesis is manageable for Windows, Mac, and Linux, and in addition portable applications for iOS, Android, Windows Phone, and Windows 8. Yes - that suggests you can apply your telephone or tablet to hitch with your remotely skilful PCs while on the go. Group Viewer likewise gives you a chance to additionally utilize a web program to remotely get to a PC. Various different components are additionally included, similar to the capacity to impart a solitary application window to another person (quite than the perfect desktop) and the excellent to print remote forms to an area printer.

b. Remote Utilities

Remote Desktop connection can be established using a "Web-ID" between two PC's. Remote desktop connection allows establishing 10 PC's connection at a time. [2]

i. Client Side

The Viewer project is an app available in Android and IOS platform providing host devices to extract data more securely.

Balanced parts can be used from the viewer so you can truly get to a PC remotely without study the screen; however screen-audit is, unquestionably Out-of-the-way Utilities' principle highlight .Here are a percentage of the modules Remote Utilities permits: A remote errand director, record exchange, power control for remote rebooting or WOL, access to Command Prompt, remote report launcher, framework data chief, content talk, remote registry access, and remote webcam seeing.

ii. Aero Admin

Aero Admin is in all probability the at ease database to use for undeveloped secluded access. There are barely any situations, and everything is speedy and to the fact, which is textbook for natural funding

iii. Host Side

Aero Admin aspects a significant amount like the Team Viewer database that tops this rundown. Only open the useful platform and report the ID to extra person. The ID is the manner by which the customer PC will know how to interface with the host.

iv. Client Side

The purchaser PC essentially needs to run the same Aero Admin program and enter the ID into their structure. You can pick View just or Remote Control before you relate. You can preference Opinion just or Isolated Control before you relate, and a short time later essentially handpicked Connect to call faraway control.

c. Ultra vnc

A further remote contact project is Ultra VNC. Ultra VNC mechanism somewhat like Remote Utilities, where a headwaiter and viewer is introduced on two PCs and the viewer is utilized to control the server

i. Host Side

When you introduce UltraVNC, you're inquired as to whether you wish to present the Server, Viewer, or both. Present the Server on the PC you wish to interface with. You can present the Ultra VNC Server as a system advantage so it's persistently running. This is the ideal option so you can essentially make a relationship with it with the client programming [1].

ii. Client Side

To make a relationship with the Ultra NC Server, you ought to present the Viewer portion in the midst of setup. In the wake of arranging port sending in your switch, you'll have the capacity to get to theAll that you need is the Server's IP area to make the affiliation.

III. NON FUNCTIONAL REQUIREMENTS

i. Usability

Usability of application does matter and plays an important role. Our application has to be usable for all users.

ii. Reliability

The ability to be relied on or depended on, as for accuracy, so your application has to be reliable not dependent on any other application [2].

iii. Performance Requirement

This application deal with the real time processing so its performance plays important part in its development. We should use pc' and processing android phone to use this application and use better algorithms to overcome the performance

iv. Supportability

Supportability means your systems have to meet the operational requirements. Your application has to support all requirement of organization

v. Implementation

Our application has to be implemented everywhere like offices, colleges and homes. Although it has also be reliable as it must be recoverable quickly, and be accurate.

vi. Legal

There may be aboveboard concerns involving isolation of information, highbrow property rights, export of regulated tools, etc.

a. Research Design and Proposed study

Secure remote desktop director execute utilizing customer server model while php is utilized as the application program interface in the correspondence layer.

The noticeable components of Secure Remote Desktop Manager (SRDM) are record exchange, screen-share, and wake-on-LAN. This reason contract with the constant passing out so its execution has influence in its advancement. We ought to utilize pc' and handling android telephone to utilize this application and utilize better calculations to defeat the execution.

b. Data security algorithm

Data in the form instruction being transmitted between the nodes is required confidentiality as it is remotely shared content or instruction given by competent authority to sub ordinate using our Technique. When a data is passing by server, thesis encryption algorithm will intelligently be applied.

The step by step processor of algorithm is given as:

Basic differentiation rules are advanced integration methods involving trigonometric substitution. Circle and ellipse basic concepts e.g. general equation of circle and general equation of ellipse. For advanced complexity graph is also the part of encryption technique. Condition of auxiliary circle is also included.

c. Key generation

Advanced simplification techniques for generating keys

Formulas implementation

Equation of circle $x^2+y^2=r^2$

Equality of ellipse $p^2/q^2+r^2/s^2=1$

Semi Major Access

Semi major access of ellipse is a^2

Semi minor Access

Semi minor access of ellipse is b^2

Auxiliary Circle

Centre of circle = centre of ellipse

Diameter = Major axis

IV. METHODOLOGY

Java, MySQL, PHP is used. Encryption technique used for security. Basic differentiation rules. Plain text is not directly used to encrypt as it

first changes into function form .Advanced integration methods involving trigonometric substitution. Advanced integration methods involving trigonometric substitution. Circle and ellipse basic concepts e.g: common equation of circle and ellipse. The whole process of key generation is complex in its nature. Just because advanced maths is the basis of technique so we have used “MATLAB” for coding it. MATLAB does not involve any library so basic programming logics is used to code the technique.

a. Encryption Algorithm Technique

i. Key Generation

Key should be of 5 digits.

e.g:- Key => SANAL

Now divide key into several parts:

S A = x,x or y,y

NA = y,y or x,x

L = constant

Applying:-

ii. Apply general formula of ellipse having Centre of origin

$$px * px + py * py = \text{constant}$$

p = position

$$1x * 2x + 3y * 4y = L \text{ where } L = 12$$

$$2x^2 + 12y^2 = 12$$

$$(2x^2/12) + (12y^2/12) = 12/12$$

$$(x^2/6) + (y^2/1) = 1$$

Above equation shows the equal representation or equation of an ellipse having centre at origin and:-

Semi-major axis => $a^2 = 6$

Semi-minor axis => $b^2 = 1$

Now

$$a^2 = 6, b^2 = 1$$

$$a = \sqrt{6}, b = \sqrt{1}$$

Here we can apply condition for auxiliary circle:-

Centre of circle = centre of ellipse

Diameter = Major axis

$$\Rightarrow 2r = 2a$$

$$\Rightarrow a=r$$

$$\Rightarrow r = \sqrt{6}$$

Applying general equation of circle:

$$(x-a)^2 + (y-b)^2 = r^2$$

$$x^2 + y^2 = 6$$

Now:-

Suppose $y^2 = 0$ ($x^2=6$ can also be supposed)

So:-

$$x^2-6=0$$

Applying sq. root on both sides:-

$$\sqrt{x^2-6}=0$$

Or

$$\sqrt{6-x^2}=0$$

Applying integral

$$\int \sqrt{6-x^2} dx$$

Since, $a^2=x^2$

Put $x = a \sin \theta$

Out $x = \sqrt{6} \cos \theta$

And

$$x = \sqrt{6} \sin \theta$$

$$x^2 = 6 \sin^2 \theta$$

$$6-x^2 = 6-6\sin^2 \theta$$

$$6-x^2 = 6\cos^2 \theta$$

$$\sqrt{6-x^2} = \sqrt{6}\cos\theta$$

Substituting value of $\sqrt{6-x^2}$ and dx

$$\Rightarrow \int \sqrt{6} \cos\theta \times \sqrt{6} \cos\theta d\theta$$

$$\Rightarrow 6 \int \cos^2\theta d\theta$$

$$\Rightarrow 6 \int (1 + \cos 2\theta)/2 d\theta$$

$$\Rightarrow 6/2 [\int 1 d\theta + \int \cos 2\theta d\theta]$$

$$\Rightarrow 3 [\theta + (\sin 2\theta)/2]$$

$$\Rightarrow 3\theta + 3(\sin 2\theta)/2$$

$$\Rightarrow 3\theta + 3 \{ (2\sin\theta\cos\theta)/2 \}$$

$$\Rightarrow 3\theta + 6 (\sin\theta\cos\theta)/2$$

$$\Rightarrow 3\theta + 3\sin\theta\cos\theta$$

Now put back values of $\theta, \sin\theta, \cos\theta$

$$\Rightarrow 3(\sin^{-1} x/\sqrt{6}) + 3(x/\sqrt{6})(\sqrt{6-x^2}/\sqrt{6})$$

$$\Rightarrow 3 \sin^{-1} x/\sqrt{6} + \{x \sqrt{(6-x^2)}/2\}$$

Rule:-

If $\sin^{-1}(\theta)$, therefore $\theta=1$

$\cos^{-1}(\theta)$, therefore $\theta=0$

So, we have $\sin^{-1} (x/\sqrt{6})$, so we put $x=1$

$$\Rightarrow -3\sin^{-1}(1/\sqrt{6}) = (x \sqrt{6-x^2})/2$$

$$\Rightarrow -3(24.19) = (x \sqrt{6-x^2})/2$$

$$\Rightarrow -72.5 = (x \sqrt{6-x^2})/2$$

$$\Rightarrow -73x^2 = x \sqrt{6-x^2}$$

$$\Rightarrow -146 = x \sqrt{6-x^2}$$

Sq. on b.s:-

$$\Rightarrow 2/3/6 = x^2(6-x^2)$$

$$\Rightarrow 2/3/6 = 6x^2 - x^4$$

$$\Rightarrow 6x^2 - x^4 - 2/3/6 = 0$$

$$\Rightarrow x^2(6-x^2) - 2/3/6 = 0$$

$$\Rightarrow 6x^2 - x^4 - 2/3/6 = 0$$

Differentiating on both sides:-

$$f'(x) \Rightarrow 12x^2 - 4x^3$$

$$f'(x) \Rightarrow 12x^2 - 12$$

so, $x=0 \Rightarrow K1$

$x=12 \Rightarrow K2$

Now:-

e.g: Plain text= AMNA

A=1, N=14, M=13, A=1

Consider:-

AM=x, NA=y

Now,

$$\Rightarrow \int_1^{13} x dx, \int_{14}^1 y dy$$

$$\Rightarrow [x^2/2]_1^{13}, [y^2/2]_{14}^1$$

$$\Rightarrow 1/2[(13)^2 - (1)^2], 1/2[(1)^2 - (14)^2]$$

$$\Rightarrow 83 = F, 97.5 = 98 = U$$

Suppose,

a=F, b=U

Now consider following graph and exclude the vertices

Above two alphabets made a circle which has following characteristics:

- As the circle is nearly touching x-axis so, $c=g^2$
- Centre of circle $(-g,-f)$
- Equation of circle:
 $\Rightarrow x^2+y^2+2gx+2fy+c=0 \rightarrow \text{eq. A}$

As the circle is passes through $(31, 22)$ and $(33, 15)$ so it must satisfy eq. A

$$(31, 22) = (31)^2 + (22)^2 + 2g(31) + 2f(22) + c = 0$$

$$(31, 22) = 1445 + 62g + 44f + c = 0 \rightarrow \text{eq.1}$$

$$(33, 15) = (33)^2 + (15)^2 + 2g(33) + 2f(15) + c = 0$$

$$(33, 15) = 1314 + 66g + 30f + c = 0 \rightarrow \text{eq.2}$$

Subtracting eq.1 & 2

$$\Rightarrow 131 - 4g + 14f = 0 \rightarrow \text{eq.3}$$

From eq.3:-

$$\Rightarrow f = (4g - 131)/14$$

Putting 'f' in eq.1

$$\Rightarrow 1445 + 62g + 44\{(4g - 131)/14\} = g^2 = 0$$

$$\Rightarrow 20230 + 868 + 176g - 5764 + 14g^2 = 0$$

$$\Rightarrow 14g^2 + 1044g + 14466 = 0$$

$$g = -18.3 \text{ therefore } g = -19$$

$$g = -56.17, \text{ therefore } g = -57$$

And:

$$c = g^2$$

$$c = 361, c = 3249$$

And:

$$f = \{4(-19) - 131\}/14 = -14.78 = -15$$

$$f = \{4(-57) - 131\}/14 = -25.6 = -26$$

So,

$$g = -19, f = -15, c = 361$$

$$\Rightarrow x^2 + y^2 - 38x - 30y + 361 = 0$$

And,

$$g = -57, f = -26, c = 3249$$

$$\Rightarrow x^2 + y^2 - 114x - 52y + 3249 = 0$$

Adding both equations:

$$\Rightarrow 2x^2 + 2y^2 - 152x - 82y + 3610 = 0$$

Differentiating both sides w.r.t

$$\Rightarrow f'(x) = 4x - 152 + 0 -$$

$$82dy/dx + 4ydy/dx$$

$$\Rightarrow dy/dx + 82dy/dx + 4ydy/dx = 4x - 152$$

$$\Rightarrow dy/dx(1 + 82 + 4y) = 4x - 152$$

$$\Rightarrow dy/dx = (4x - 152)/(83 + 4y) \rightarrow \text{eq.1}$$

Now:-

Repeat the above same process

$$dy/dx = (2x - 38)/(31 - 2y) \rightarrow \text{eq.2}$$

Adding eq.1 and 2

$$2dy/dx = \{(2x - 38)/(31 - 2y)\} + \{(4x - 152)/(83 + 4y)\}$$

Now,

We have,

$$K1 = 0 = x$$

$$K2 = 12 = y$$

So,

$$\Rightarrow \frac{2dy}{dx} = \{(2x - 38)/(31 - 2y)\} + \{(4x - 152)/(83 + 4y)\}$$

$$\Rightarrow 2 = \left[\frac{2(0) - 38}{\{31 - 2(12)\}} + \frac{\{4(0) - 152\}}{\{83 - 4(12)\}} \right]$$

$$\Rightarrow -10.85 + 1.160$$

Now,

$$10.85 = 11 = K$$

$$1.16 = 2 = B$$

1) *b. Algorithm*

Algorithm is implemented using MATLAB. First two keys are generated by implying equations of circle, ellipse and integration. In the second phase, three methodical operations are applied as:

- a) Area under the curve.
- b) Graph to find out vertices
- c) Equation of circle with Centre h, k

Completed MATLAB coding is as under:

Function ghazzal (k,pt)

Global con

$$X1 = k(1:1);$$

$$X2 = k(2:2);$$

$$y1 = k(3:3);$$

$$y2 = k(4:4);$$

$$\text{Constant} = k(5:5);$$

$$p1 = \text{strfind}(k, x1);$$

$$p2 = \text{strfind}(k, x2);$$

$$p3 = \text{strfind}(k, y1);$$

$$p4 = \text{strfind}(k, y2);$$

$$\text{temp} = 2;$$

for a='A':'Z'

if(a==constant)

con=temp;

break;

else

$$\text{temp} = \text{temp} + 2;$$

end

end

$$px * px + py * py = \text{constant.}$$

$$px = p1 * p2;$$

$$py = p3 * p4;$$

$$x = \text{rats}(px/\text{con});$$

$$y = \text{rats}(py/\text{con});$$

$$\Rightarrow x^2/x + y^2/y = 1.$$

Above equation shows the general equation of an

Ellipse having centre:

$$\text{semi-major-axis} = a^2 = x; a = \sqrt{x}.$$

$$\text{semi-minor-axis} = b^2 = y; b = \sqrt{y}.$$

Therefore as Auxilliary circle says:

centre of circle = centre of ellipse,

Diameter = major-axis,

$$2r = 2a,$$

$$r = a.$$

Applying general equation of the circle:

$$(x-a)^2 + (y-b)^2 = r^2,$$

$$x^2 + y^2 = r^2 = (\sqrt{x})^2 = x.$$

Now after supposing $y^2 = 0$, we get;

$$x^2 = a,$$

$$x^2 - a = 0,$$

Square root on both sides;

$$\sqrt{x^2 - a} = 0,$$

or

$$\sqrt{a - x^2} = 0.$$

```

separating denominators.
[n1, d1] = numden(sym(x)); % n = numerator & d
= denominator.
we need denominator here, so inverting x.
disp(n1);
disp(d1);
Integrating sqrt(a-x^2).
syms x1 x2; Variables which will be used as
aspects for integration or differentiation.
fun = (x2-(x1.^2)).^1/2;
fun2 = int(fun,x1,x,y);
solving for x2 which a.
fun3 = solve(fun2,x2);
separating denominators.
[n, d] = numden(sym(fun3)); n = numerator & d
= denominator.
taking modulus of numerator and denominator with
26 i.e. number of
alphabets.
k1 = mod(n,26);
k2 = mod(d,26);
Getting first key equivalent alphabet.
temp2 = 1;
for b='A':'Z'
if(temp2==k1)
con2=b;
else
temp2 = temp2+1;
end
end
Getting second key equivalent alphabet.
temp3 = 1;
for c='A':'Z'
if(temp3==k2)
con3=c;
break;
else
temp3 = temp3+1;
end
end
p1 = pt(1:1);
p2 = pt(2:2);
p3 = pt(3:3);
p4 = pt(4:4);
emp4=2;
for a='A':'Z'
if(a==p1)
con4a = temp4;
temp4= temp4 + 2;
elseif(a==p2)
con4b = temp4;
temp4= temp4 + 2;
elseif(a==p3)
con4c = temp4;
temp4= temp4 + 2;
elseif(a==p4)
con4d = temp4;
temp4= temp4 + 2;
else
temp4=temp4+2;

```

```

end
end
consider p1*p2 = x = m & p3*p4 = y = n.
m = p1*p2;
n = p3*p4;
taking integral of x & y.
syms m n;
F = int(m,m,con4a,con4b);
U = int(n,n,con4c,con4d);
if(F<0&&U<0)
F = -(F);
U = -(U);
else if(F<0&&U>0)
F = -(F);
elseif(F>0&&U<0)
U = -(U);
End
F = mod(F,26);
U = mod(U,26);
if(F==0&&U==0)
F = 1;
U = 1;
elseif(F==0&&U~=0)
F = 1;
end
Getting F & U numbers equivalent alphabets.
temp4 = 1;
for a='A':'Z'
if(temp4==F)
con5 = a;
temp4 = temp4+1;
elseif(temp4==U)
con6 = a;
temp4 = temp4+1;
else
temp4 = temp4+1;
end
end
cd1 = [5 10 15 15 10 5 0 -5 -10 -15 -15 -10 -5 -5 -10
-15 -15 -10 -5 0 5 10 15 10 5];
cd2 = [-5 -10 -15 -20 -25 -30 -35 -30 -25 -20 -15 -10
-5 5 10 15 20 25 30 35 30 25 20 15 10 5];
temp5 = 1;
for a = 1:26
if(temp5==F&&temp5~=U)
val1x = cd1(a);
val1y = cd2(a);
temp5 = temp5+1;
elseif(temp5~=F&&temp5==U)
val2x = cd1(a);
val2y = cd2(a);
temp5 = temp5+1;
elseif(temp5==F&&temp5==U)
val1x = cd1(a);
val1y = cd2(a);
val2x = cd1(a);
val2y = cd2(a);
break;
else
temp5 = temp5+1;

```

```

end
end
disp(val1x);
disp(val1y);
disp(val2x);
disp(val2y);
plotting graph...
the above two alphabets make a circle individually,
therefore we are
passing their coordinates through the equation of the
circle. Which is:
 $x^2 + y^2 + 2gx + 2fy + c = 0$ .
syms g h c; constants for now
for first alphabet coordinates and here x = val1x & y
= val1y.
eqn1 = val1x.^2 + val1y.^2 + 2*g*val1x +
2*h*val1y + c;
disp(eqn1);
for second alphabet coordinates and here x = val1x
& y = val1y.
eqn2 = val2x.^2 + val2y.^2 + 2*g*val2x +
2*h*val2y + c;
disp(eqn2);
for cancelling c.
if(eqn1~=eqn2)
fun4 = eqn1 - eqn2;
else
fun4 = eqn1;
end
if(isempty(solve(fun4,h))==0&&isempty(solve(fun4
,g))==0)
fun5 = solve(fun4,h);
syms h;
fun6 = subs(eqn1,h,fun5);
fun7 = subs(fun6,c,g.^2); % here c = g^2
fun8 = solve(fun7,g); % now for getting g
fun9 = subs(fun5,g,fun8);
c = fun8.^2;

elseif(isempty(solve(fun4,h))==0&&isempty(solve(f
un4,g))==1)
fun5 = solve(fun4,h);
syms h;
fun6 = subs(eqn1,h,fun5);
fun9 = subs(fun6,c,g.^2);
fun8 = 1;
c = 1;
else if(is empty(solve(fun4,h))==1&&is
empty(solve(fun4,g))==0)
fun8 = solve(fun4,g); % here c = g^2
fun9 = 0; % now for getting h
c = fun8^2;
elseif(isempty(solve(fun4,h))==1&&is
empty(solve(fun4,g))==1)
fun8 = 1;
fun9 = 1; here c = g^2
c = 1; % now for getting h
end
disp(fun8); g
disp(fun9); h

```

```

disp(c); c
% solving eqn1 & eqn2 by g = fun6, h = fun7 & c =
c.
syms x y; used
eqn1 = x.^2 + y.^2 + 2*fun8*x + 2*fun9*y + c;
differentiating wrt y and then integrating wrt x.
fx = diff(eqn1,y);
fy1 = int(fx,x);
solving fy1 with x = k1 and y = k2.
ka1 = k1;
ka2 = k2;
syms x y;
finfun = subs(fy1,x,ka1);
finfun2 = subs(finfun,y,ka2);
finfun2 = real(finfun2);
% separating denominators if exist.
[n, d] = numden(sym(finfun2));
if isempty(d)
pehla = n;
dusra = 0;
else
pehla = n;
dusra = d;
end
last = pehla + dusra;
Taking modulus of F and U, with respect to 26 i.e.
number of alphabets.
et = mod(last,26);
Checking negativity.
if(et<0)
et = -(et);
end
Getting et equivalent alphabet.
templ = 1;
for c='A':'Z'
if(templ==et)
enc = c;
break;
else
templ = templ+1;
end
end
disp('_____Mat Cryptology_____');
disp(' ');
disp(' ');
disp('Key Generation: ');
disp(' ');
disp('Your entered key is: ');
disp(k);
disp('The Calculated keys are: ');
disp(' ');
disp('Key1: ');
disp(k1-con2);
disp('Key2: ');
disp(k2-con3);
disp(' ');
disp('Encryption: ');
disp(' ');
disp('Your entered plain text is: ');
disp(pt);

```

```
disp(' ');
disp('The Encrypted text is: ');
disp(' ');
disp(enc);
End
```

V. DATA ANALYSIS

a. Features

The prominent features of Remote Desktop Manager (RDM) are file transfer, screen-share, and wake-on-LAN. Following is the description of each feature.

b. File Transfer

File relocation is a basic term for the act of transmitting files over internet. The RDM have implemented this feature using http .The RDM allows bi-directional file transfer, that is, either user can transfer file from mobile to their computer system or from their computer system to their mobile independent of the file size and type. So with RDM, the user can easily browse their files of their computer system and transfer them between their computer system and their Android device. [3]

c. Wake on LAN

The working of WOL feature in RDM is to wake up the PC from anywhere if it is switched off. However, this feature requires following steps to be implemented.

- PC's power supply should be active.
- Ethernet cable should be plugged into the connector.
- If connected to the WIFI, router should be switched on.

d. Shut Down

The RDM have implemented Shutdown feature which allows user to shut down the user selected machine (computer system). Instead of shutting the PC from the desktop, you can shut down your computer system with just one touch.

d. Screen-Sharing

With RDM, the users can share their computer system's screen on their Android mobile device. This feature benefits RDM's user in many ways for example if a file is too large to be stored on the mobile device then the user can view that file from their Android device on their PC via screen-share

while having control over the keyboard and mouse cursor of the shared PC. [4]

f. Personalization

In order to attract user and gain their interest, the RDM allows user to personalize theme and also allows user to run the application in either silent mode. Such RDM's personalization features enhance application friendliness towards user.

g. Chat

With RDM user can send any type of message to client means computer .RDM allows bi directional chatting between android cell and pc. [3]

h. Notification via SMS

With RDM Whenever any unauthorized person will access your machine a background notification will sent to user on mobile that your machine has come online.

i. Other Features

The other feature of RDM includes changing user password and viewing user associated computer system information. The changing of user password is an important feature as if the user forgets or loses password then this feature helps in recovering the password. For such case, a new auto-generated password is sent to the user's entered email address. This feature eases user's usability and also helps in establishing a good reputation of the application on the user. And the feature to view the information of user associated computer system which is obtained by the Desktop application at the time of Desktop registration and is saved into the database with respect to user's record. Finally, RDM also provides its own email address to the users for reporting or feedback.

VII. IMPLEMENTATION

a. Installation Guide

The RDM consists of two applications in which one of them is an Android mobile app which is required to be installed on an Android mobile phone and Desktop application which is required to be installed on the computer system whose remote access is needed by the user. It is designed to work on any computer system OS such as Windows/Linux/Macos and also with any android OS such as Kitkat / Lollipop / Jellybeans. Following are steps for installation:

- Install .apk file (mobile app) on your android device.
- Since, you are using the application first time so first you have to register yourself by using signup option. Kindly give your full name, email and password in order to register successfully.
- After registration, the machine tab screen will appear that have no machines yet. In order to access your computer system, you need to install Desktop RDM app on your computer system. Click Download from menu and a link to RDM Desktop app will be sent to your given email id.
- Now, open email and visit to the link provided in order to download Desktop RDM. After zip file download is completed on your computer system, extracting it and run jar file. After running the jar file, your machine is registered in database with specified user account.
- When you login with your account from your mobile, you will view your associated computer systems in Machine List tab.

The thesis, Remote Desktop Manager (RDM), consists of two applications which are Mobile and Desktop application. Following are the tools and technologies used in the development of RDM.

b. Operating System

Operating System must support all the required tools and technologies for the development of a thesis.

c. Windows

The interface of both applications of RDM have been developed using the Windows Operating System on following versions:

- Windows 7
- Windows 8

e. Android

Android is a Smartphone platform which is founded by Google and Open Handset Alliance (OHA). Its license is under Apache v2 open source permit. This platform is used as a equipment for encoding.[5]. Since, the RDM is aimed to be developed as an android application, therefore, the mobile device which remotely connects to the computer system must have any version of Android OS installed it. Different Android OS was used for trying and organization the mobile application.

VII.RESULTS& DISCUSSION

Remote Desktop Control permits the client to control any PC from another PC. Generally this is a typical errand for a system chairman, however these days numerous individuals have more than one PC and exchanging between them takes a ton of time. Envision, you can sit at your work environment and control your home PC. You can help your companions or family take care of issues on their PCs, viewing all alone screen and utilizing your own mouse and console. No more requirements for long telephone calls to clarify clicks and key presses. No more need to go to the workplace promptly to take care of simple or idiotic issues like out of paper.

Take advantage of the partner

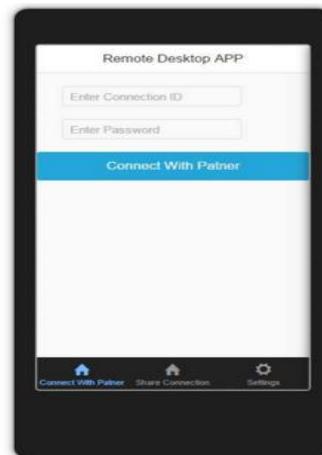
Time savings

Fast, Flexible, secure

Freedom to work from anywhere

Mobile Participation on the road

a. Performance Evaluation





The researchers are more focused in design of methods and algorithms to secure data from attacks in wireless transmission.

VIII. CONCLUSION

The aim of this thesis is too factual to procedure desktop application on android with communicating standard. With the standard algorithm technique. The method especially take caution of security issue that is the transfer of information from desktop to mobile and vice versa in fully the system of encryption.

a. *Future Enhancement and Limitations*

We believe the yet to come work should mainly motivation on improving performance, transforming existing remote desktop server application. So, improving the existing limitations in the RDM is our team's focus now. Though we almost managed to resolve most of the problems we faced, still.. Some of the restrictions of the uses are listed below: The keyboard event is limited to single key operation. Combo keys such as Alt + Tab, Win + R, Ctrl + Alt + Del etc. are not implemented. The arrow type of the headwaiter side does not conversion with the change in cursor type of client side. Capture image of user through webcam on runtime to enhance security.

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REFERENCE

[1] Huang, T. Y., Wang, H. H., Peng, C. L., Huang, H. M, 2015, A New Remote Desktop Approach with Mobile Devices: Design and Implementation. In Ubiquitous Computing

Application and Wireless Sensor .Springer Netherlands, 305-321.

- [2] Kawsar, F., Ahamed, S., & Love, R., 2015, Remote Monitoring Using Smartphone Based Plantar Pressure Sensors: Unimodal and Multimodal Activity Detection. In Smart Homes and Health Telematics Springer International Publishing 138-146.
- [3] Bheemarasetti, S., & Prathuri, C, 2002, U.S. Patent Application. 10/189,058
- [4] Suesserman, M, 2004, U.S. Patent Application 10/966,757.
- [5] Jang, S. J, 2011, Design of the Remote Management System in the Windows Operating System. IJCSNS, 11(11), 38.
- [6] Morris, R., & Thompson, K.,1979, Password security: A case history. Communications of the ACM, 22(11), 594-597.
- [7] Nguyen, T. D., Choe, S., & Huh, E. N, 2012, May, An efficient mobile thin client technology supporting multi-sessions remote control over VNC. In Computer Science and Automation Engineering (CSAE), 2012 IEEE International Conference on .IEEE. (3),155-159.
- [8] McLean, J, 1990, May, Security models and information flow. In Research in Security and Privacy, 1990. IEEE Computer Society Symposium on , 180-187.
- [9] Dacier, M, 1994, towards quantitative evaluation of computer security, Institute National Polytechnique de Toulouse.
- [10] Goguen, J. A., & Meseguer, J, 1982, Security policies and security models IEEE 11.
- [11] Pfleeger, C. P., & Pfleeger, S. L, 2002, Security in computing. Prentice Hall Professional Technical.
- [12] Huttlin, E. L., Ting, L., Bruckner, R. J., Gebreab, F., Gygi, M. P., Szpyt, & Dong, R, 2015, The BioPlex network: a systematic exploration of the human interactome. Cell, 162(2), 425-440.
- [13] Denning, D. E. R, 1999, Information warfare and security (Vol. 4). Reading: Addison-Wesley.
- [14] Sanders, R. T., & Fleishman, L, 1988, U.S. Patent No. 4,754,255. Washington, DC: U.S. Patent and Trademark Office.
- [15] White, P, 1986, U.S. Patent No. 4,630,201. Washington, DC: U.S. Patent and Trademark Office.
- [16] Gelb, E. J, 1996, U.S. Patent No. 5,550,984. Washington, DC: U.S. Patent and Trademark Office.
- [17] Boyko, V., MacKenzie, P., & Patel, S, 2000, January, Provably secure password-authenticated key exchange using Diffie-Hellman. In Advances in Cryptology—Eurocrypt 2000 Springer Berlin Heidelberg,156-171.

- [18] Nhivekar, G. S., & Mudholker, R. R, 2015, Data logger and remote monitoring system for multiple parameter measurement applications.
- [19] Stephen, M. B. I., House, D. A., McDougal, R. L., & Lamberti Jr, S. J, 1998, U.S. Patent No. 5,790,798. Washington, DC: U.S. Patent and Trademark Office.
- [20] Zhang, P., Kogure, Y., Matsuoka, H., Akutagawa, M., Kinouchi, Y., & Zhang, Q, 2007, August, A remote patient monitoring system using a Java-enabled 3G mobile phone. In Engineering in Medicine and Biology Society, 2007. EMBS 2007. 29th Annual International Conference of the IEEE 3713-3716.