# Development of Android Based Real Location Tracking App

Pratibha Sharma<sup>1</sup>, Reema Sachdeva<sup>2</sup>, Rohini Sharma<sup>3\*</sup> <sup>1</sup> Student, Sat Kabir Institute of Technology and Management, Haryana, India <sup>2</sup>Assistant Professor, Sat Kabir Institute Of Technology And Management, Haryana, India <sup>3</sup>Assistant Professor, A.I.J.H.M. College, Rohtak, Haryana \*Corresponding Author: Rohini Sharma

**Abstract** – With the change in human living standards, a human needs to travel alone at new places. He is not aware of various places at new location. His family members might be worried about his well-being. We have developed an Android based real location tracking App which is able to track current location of a person. It will inform a person about his current location at regular interval of time. We have also developed a database in which a user can save information about his name and address and this information can be hand over to a person who is interested in travelling at same place. This App is able to register new people and it is able to provide Log In facility at any instance of time. This application makes use of real time Firebase database.

# IndexTerms: Android App, Location Tracking, Real Time Database

#### I. INTRODUCTION

An Android App can be very useful in determining the location of the user. By identifying a user's location in an Android app can be really useful. Users take their mobiles all over the place and are frequently using them on the go, and as developers we can benefit from that by providing a more appropriate familiarity based on their current location. This paper presents some easy steps which will create an App that will identify the user location easily. It can also alert her about location regularly. This App occupies less space on the mobile device and it can be installed on any Android based mobile like Redmi and OPPO etc. While developing a location-aware application for Android, we can make use of GPS and Android's Network Location Provider to obtain the user location as quickly as users necessity. Android's Network Location Provider verifies user location using cell tower and Wi-Fi signals, providing location information in a way that works indoors and outdoors, responds faster, and uses less battery power. To get the user location in an application, we can use both GPS and the Network Location Provider, or just one.

#### **II. RELATED WORK**

Linux based Android is an open and free operating system, which is mostly used for mobile stations, such as smart phones and tablets. It was developed by Open Handset Alliance composed of more than 30 technology companies and mobile phone companies. It tries to permit users experience the best service features, and allow developers to get a more open level for more suitable software developing. Thus mobile applications with more convenient functions can be developed via Android [1]. Authors in [2] has emphasized on the requirement of the location tracking app, its architecture and other possibilities. Authors in [3] have mentioned various types of Android based applications like weibo client, video player and audio player. Authors in [4] have provided joint tracking and simulation of human body movement through an android app. An android app can be useful in various areas like face recognition systems [5-6], network security [7-9], wireless body area networks [10-11] and in wireless sensor networks [12-20] to avoid energy holes problems [21-22]. The working of newly developed App should be tested by [23-24]. Labhade has provided offline location tracking of a person [25]. Authors in [26] have provided a 24 hours GPS tracking technology.

#### III. ADDING A MAP TO AN ANDROID APP

Step 1: Download Android Studio. We have installed and worked on Android Studio 3.1.

- Step 2: Install the Google Play services SDK.
- Step 3: Create a Google Maps project

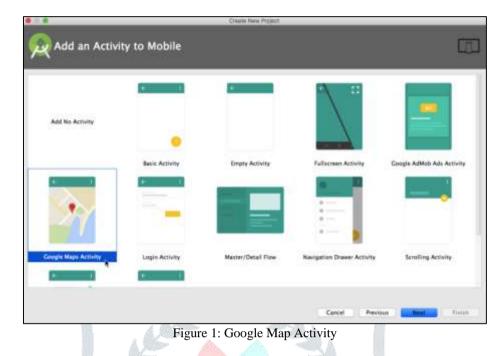
Follow these steps to create a new app project including a map activity:

- ✓ Start Android Studio.
- ✓ Create a new project as follows:

If you see the Welcome to Android Studio dialog, choose Start a new Android Studio project, available under 'Quick Start' on the right of the dialog.

- ✓ Enter your app name, company domain, and project location, as prompted. Then click Next.
- ✓ Select the form factors you need for your app. If you're not sure what you need, just select Phone and Tablet. Then click Next.
- ✓ Select Google Maps Activity in the 'Add an activity to Mobile' dialog. Then click Next.
- ✓ Enter the activity name, layout name and title as prompted. The default values are fine. Then click Finish

- ✓ The Google Maps Android API is distributed as part of the Google Play Services SDK, so the first thing you should do is launch your SDK Manager and make sure you have the latest version of Google Play Services installed – if an update is available, then now's the time to install it.
- ✓ Next, create an Android Studio project with the settings of your choice, but when you reach the 'Add an Activity to mobile' screen, make sure you select 'Google Maps Activity as shown in **Fig. 1**.



#### IV. GET A GOOGLE MAPS API KEY

- The application needs an API key to access the Google Maps servers. The type of key you need is an API key with restriction for Android apps. The key is free. You can use it with any of your applications that call the Maps SDK for Android, and it supports an unlimited number of users.
- ✓ Use the link provided in the google\_maps\_api.xml file that Android Studio created for you:
- Copy the link provided in the google\_maps\_api.xml file and paste it into your browser. The link takes you to the Google Cloud Platform Console and supplies the required information to the Google Cloud Platform Console via URL parameters, thus reducing the manual input required from you.
- ✓ Follow the instructions to create a new project on the Google Cloud Platform Console or select an existing project.
- ✓ Create an Android-restricted API key for your project.
- ✓ Copy the resulting API key, go back to Android Studio, and paste the API key into the <string> element in the google\_maps\_api.xml file as shown in Fig. 2.

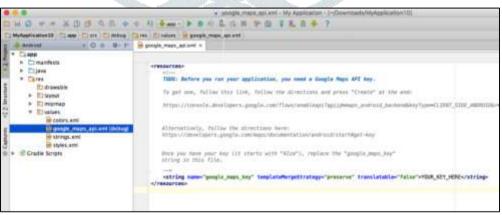


Figure 2: Google Map Activity

#### V. CONNECT AN ANDROID DEVICE

#### **5.1 Select Developer options**

On the device, open the Settings app, select Developer options, and then enable USB debugging as shown in Fig 3 (a, b, c).

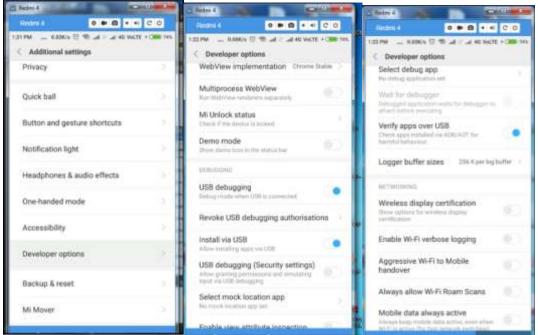


Figure 3: (a: Developer Options, b: USB Debugging, c: Verify app over USB)

# 5.2 Set up your system to detect your device

When you are set up and plugged in over USB, you can click Run in Android Studio to build and run your app on the device as shown in **Fig. 4**.

- 11.40	(8) (* Manhaddalant	Contraction of the Contraction o		
<ul> <li>In eventues</li> <li>Reconciliation description</li> <li>Reconciliation description</li> <li>Reconciliation</li> <li>Reconciliation</li> </ul>		, a marta d'anna. Tanàna Taona a Aonara 2014, amin'ny fisiana		
Sec.         Sec.           Sec.         B. Ref. compared characteristics, statistics           Sec.         Sec.           Sec.         Sec.	The Analysis and a second seco	Contribut Vital Dense Contribut Vital Dense (Marsen advance for Facet learther	The last	A A A A A A A A A A A A A A A A A A A

Figure 4: Connecting the App to your Android Device.

#### 5.3 RSA security key

When you connect a device running Android 4.2.2 (API level 17) or higher to your computer, the system shows a dialog asking whether to accept an RSA key that allows debugging through this computer. This security mechanism protects user devices because it ensures that USB debugging and other adb commands cannot be executed unless you're able to unlock the device and acknowledge the dialog.

#### VI. ENABLE DEVELOPER OPTIONS ON XIAOMI MI 5/4/3

Step 1: Unlock your phone and go to main Settings on your Xiaomi devices.

Step 2: Scroll down to find About phone and tap on it.

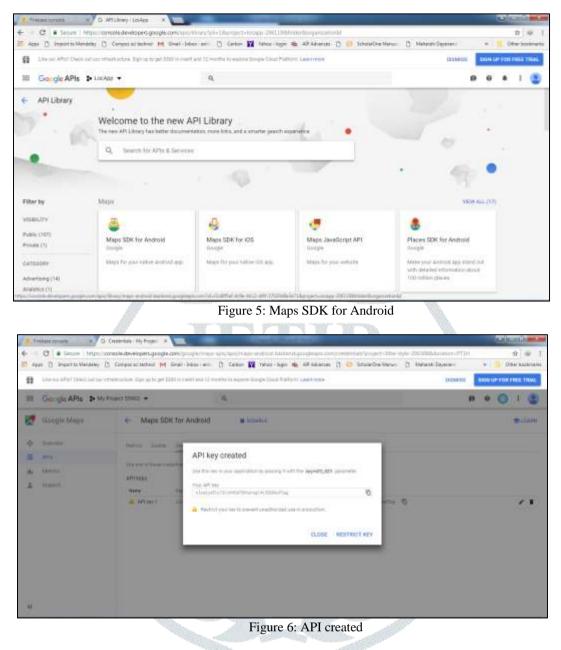
Step 3: Locate Miui Version and tap seven times on it.

After that, you will get a message "You have enabled developer option" on your device screen.

#### VII. CREATION OF API FOR GOOGLE MAP

First of all create a project and select Maps SDK for Android as shown in Fig 5. We have created a project LocAPP and

Create API by enabling credentials as shown in Fig 6.



#### VIII. ADD FIREBASE TO THE APP

- To open the Firebase Assistant in Android Studio:
- Click Tools > Firebase to open the Assistant window.
- Click to expand one of the listed features (for example, Analytics), then click the provided tutorial link (for example, Log an Analytics event).
- Click the Connect to Firebase button to connect to Firebase and add the necessary code to your app. Add users to your database, as shown in **Fig 7**.

Firebase	and a second	analis -					annen a	
n munitiversity 0	Auth	intication					weather	
KVELOP	inter		nien Alia					
		Q. Contributed and		n e 197			a t	
D manual		Testine .	Sec. 1	Control 1	Ser.	1949-100-T		
-) /wation		بابتر وستبد ويساد	-	Art 6, 2019	444,000	the second street makes	HD .	
e with		artitigention.		3415201	1044.000	100000000000000000000000000000000000000	52 C	
TABLITY		and approxim		100 \$ 10 Y	( add a line )	002/withdatar/tears	- i o	
Manager and a second seco		"And the second second	-	144.001	1010.2018	and the second second	10-	
Australs A Durithment		permitting per un			art 1214	Amaring and adding	um).	

# Figure 7: Registered Users of MyfirebaseAuthApp

IX. LOGIN AND REGISTRATION MODULE OF LOCATION TRACKING APP

Figure 8 shows the structure of the module of Log in and Registration. It has four java files.

- LogIn Activity
- Main Activity
- Profile Activity
- UserInformation

nation	100		
Transmit Allen (Line of Arman Beller) (Branch Allen (Line of B Branch Allen (Line of Arman Beller) (Branch Allen (Line of B Branch Allen (Line of Arman Beller) (Branch Allen (Line of B Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) Allen (Line of Arman Beller) (Branch Allen (Line of Arman Beller)) (Branch Allen (Lin		(Nodar Soft Nofe	
Angle State	14, 117m 10, 40 m 1, 12m 1, 12m 1, 12m 1, 12m 1, 12m 1, 12m	Dezid eer felere geen "O'Overzviell Amer	ontrontologisete flankaskatolen oprivation 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
El farende El Ballit al picepat 1 1000			Questing
111 Gaulte Build Brained at 344 800rd			Commission - A.B.

Figure 8: Log In and Registration

Figure 9 shows the new registration window for App.

<ul> <li>Fortunal of Decos (Chardrane Area siddle and Areas statistics and and and and and and and and and and</li></ul>	E feari S	The Party Name	and the other division of the	-	(2010) and (2010)	-	_	 103	<u>.a</u>
Die falt wer gerigste Gate daufge feinim Built fim.	E			Con al a	100			 	
III C   III Marc   III del   IV Ardroidia.toPojects   III firebased	Herbert 4	_			e C-0	- b, - ii	ii w B	 100	AF
- 0+ e- r • E ev		FirebaseAu	nhDemo						1
Andread Manager			User Heghtballion						
- Nyen - Di urt-marqin kripti katanalatidena Eugen-ctury		Enter your 5	Hall						
Hi B Mandetroty D Padladetroty + B Undefermation		Either your Pai	niword						
Drawn march sight between theme and the second			HEURSTRATION						
* 1 0(m)			Adds registand. They	half .					
Budgade Prijst Preizverde Coney     Budgade Prijst Preizverde Coney     Budgade Prijst Prijst Prijst Prijst     preizverd oddate Prijst Prijst     preizverd oddate Prijst     preizverde Prijst     preizverde Prijst									
Kernel								10 - 10 TW 3+ 10 TW 15 10 M	
Consider the part     Consider the part     Constant First per un participant a ter								11.00	
Counting the approach o will profile in another Land others almost favor to rain your spp under a set		100-							1
These Ball Fig Lager in Andred Primer			•	<b>1</b>				(B) Presid La	
THE RESIDENCE AND ADDRESS OF THE RESIDENCE AND ADDRESS				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		and the second second second			

Figure 9: New registration window for App.

Figure 10 shows the registration process of a new member. Figure 11 shows that user has registered and it can be checked in the Firebase Database as shown in Fig. 12.

P. Passage and provide a state of the second s	There a fer the second s	a contraction of the second se
Die 200 june Herspite Gole werber fielente Bellt fun		
In a littles in an in an all an an all and a second and a second		N: # # # # # # # # # # # # # # # # # # #
· · · · · · · · · · · · · · · · · · ·		
En Date		100
44 v Brandeds		3 t
Contract of the state of the st		
a lager	and the second	
· · . Thi service right Degit Fell pass Adams	Assess 113 gargers at carse	
E Cogeladoria	and the second	
E Porlance to		
Cashfundan		
2 In the stand in the local first and the second states		
3 If conversion and the second dama and the	CONTRACTOR NAMES	
* (-1, 0) and	stream any first first \$1	
- Dittels (says	10	
Challipher / spectrometal/head		
Childpole Strategy and	Highning As	
E yelle eteperangedes litere teriore		
<ul> <li>geographic despective destructions</li> <li>geode properties, Proper Despective</li> </ul>		
Patrip gath Frank Letting		
a serve a server and the server and		
A Real State of the second sec		P. 5.
K = 0 Ball complete an average and the second se		to B, Chen
a pill 3 @ Lond Burkd		them.
1 B Carlipte hald		A. Marcel II.
P P Resident		20 22.854
(X)		
Todard Burn detexted head you art commy on all 40		2
party and the set and a wide party and the		1
Later may place have be the past and other a will	the set of	
Il forenet 10 find - 2 2 report - 4 Annual former	< 0 =	R better
III instart has detected that you are carried on a target doing that the		Second and, Colours and County on the St.

Figure 10: Registration process of a new member.



Figure 11: New user.

Firebase	Harrison							•
Presidentian D	Auth	entication						// 🛛
011.00	-	and a second of the	UNIVATES	lander -				
L Astronomication								
2 Detabase		Q learning your entropy	in the second	(mar 10)		400 0528	c :	
s ituraje D iturije		interests.	Permit	Trainel	Ser. 1	(Average of		
turesaw		More really press.		ard 114		Terchen May	hi l	
e sen		Advertigend one			444.004	Constant State of the State of the		
TABLETY		and the second second	100			Internet President President	15	
		and a second distance.			100 X 2014		9/1	
MALYTICS		pinterin (10) grad (a.e.)		-mr5.000	365208	Bills Drive a transmission	102	
art protocol		departed for	-			pression and a second s		

Figure 12: User de@gmail saved in database.

Now save some information for the new user as shown in **Fig. 13** and it can be checked in the firebase database as shown in **Fig. 14**.

100	Teoria		2.4		-	-
	Ridmi 4				* # C C	
		FirebaseA	luthDemo			
		Welcome:	de@gmail.co	m		
-			LOGOUT			1
		Pratibha				
		Sat kabir Ins	titute			1
			SAVE INFORMATIO	2NI		
1				_		A
			Internation Sector			
			0			

Figure 13: Information being saved.

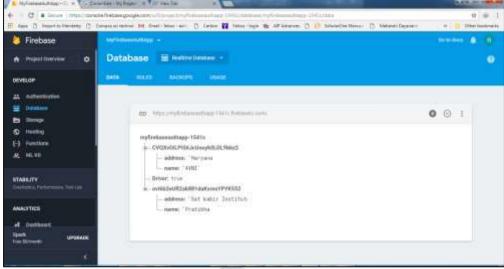


Figure 14: Information Update in the Database.

# X. LOCATION MODULE

It gives current location of the user. After the App is launched, initially a world Map is open as shown in **Fig 15**. After few seconds, it shows the current location of the user, as shown in **Fig 16**, the current location of the user Pratibha is Bahadurgarh, Haryana, indicated by the red color symbol.



Figure 15: World Map.



Figure 16: Current Location of the user.

#### **XI.** CONCLUSION

This research article registered a new user and save its information in the real time firebase database. An old user can also track his location through this App. This App saves user's travelling locations which can be provided to his relatives immediately. This is a free of cost App and can be used by anyone. It can be installed on any Android based device. It is very useful for user if he is moving in an unknown place.

#### **REFERENCES:**

- [1] Guo-Hong, Shao. 2014. Application development research based on android platform, IEEE, 7th International Conference on Intelligent Computation Technology and Automation, pp.8-12.
- [2] Sharma P., Sachdeva, R. and Sharma R. 2018. Location based tracking: The need of the hour. International Journal of Engineering Science Invention, 7(5): 50-53.
- [3] Ma, L., Gu, L. and Wang J. 2014. Research and development of mobile application for android platform. International journal of Multimedia and Ubiquitous Engineering, 9(4): 187-198.
- [4] Kwak, N.J. and Song, T.S. 2011. Joint Tracking and Transmission System for Simulating Motion of the Human Body on Android Smart Phone. International Journal of Control and Automation, 4(4): 81-90.
- [5] Sharma, R. 2018. Face recognition using principal component analysis: A survey. Proceedings of ARSSS International Conference, 29th April, 2018, Bengaluru, India, 59-62.
- [6] Sanju, Bhatia, K. and Sharma R. 2018. An analytical survey on face recognition systems. International Journal of Industrial Electronics and Electrical Engineering, 6(3): 61-68.
- [7] Samiksha, Bhatia, K., Sharma, R. 2018. Cryptographic Techniques: in New Era. International Journal of Advanced Computational Engineering and Networking, 6(3): 49-52.
- [8] Sharma, R. 2018. Security Attacks and Prevention in Wireless Sensor Networks. International Journal of Emerging Technology and Advanced, 8(4): 142-148.
- [9] Sharma, R. 2018. Jamming Threat to Wireless Sensor Network. International Journal on Future Revolution in Computer Science & Communication Engineering, 4(4): 546-549.
- [10] Rana, A., Bhatia, K. and Sharma R. 2017. IIEPDR: Improved Information and Energy Proficient Data Relaying Routing Protocol for Wireless Body Area Networks. International Research Journal of Science Engineering and Technology, 7(2): 4-11.
- [11] Rana, A., Bhatia, K. and Sharma R. 2017. ETM: A survey on Energy, Thermal and Mobility Efficient Routing Protocols for Wireless Body Area Sensor Network. International Research Journal of Commerce, Arts and Science, 8(4): 26-38.
- [12] Sharma, R. and Lobiyal, D.K. 2018. Intelligent Water Drop Based Coverage- Connectivity and Lifespan Maximization Protocol for Wireless Sensor Networks. Recent Patents on Computer Science, In Press.
- [13] Chhillar, P., Bhatia, K. and Sharma, R. 2016. Spiral Based Sink Mobility Method Aiming Lengthening of Lifetime of Sensor Networks. International Research Journal of Engineering and Technology, 3(5): 631-637.

- [14] Chhillar, P., Bhatia, K. and Sharma, R. 2016. Swarm Intelligence Inspired Energy Efficient Routing Protocols for Sensor Networks: An Investigation. International Research Journal of Engineering and Technology, 3(5): 623-630.
- [15] Hooda, S. Bhatia, K. and Sharma, R. 2016. Enrichment of Life span of Sensor Networks through BCO and Gateway Node. International Journal of Research in Information Technology,4(5): 9-20.
- [16] Hooda, S. Bhatia, K. and Sharma, R. 2016. Nodes Deployment Strategies for Sensor Networks: An Investigation. International Research Journal of Engineering and Technology, 3(4): 2499- 2500.
- [17] Sharma, R. and Lobiyal, D.K. 2015. Dual Transmission Power and Ant Colony Optimization Based Lifespan Maximization Protocol for Sensor Networks. International Journal of Business Data Communications and Networking, 11(1): 1-14.
- [18] Sharma, R. and Lobiyal, D.K. 2015. Region Based Energy Balanced Inter-cluster communication Protocol for Sensor networks. NCCCIP Conference Proceedings, Nirjuli India,184-195.
- [19] Sharma, R. and Lobiyal, D.K. 2015. Energy Based Proficiency Analysis of Ad-hoc Routing Protocols in Wireless Sensor Networks. IEEE, Conference Proceedings ICACEA, Ghaziabad, India, 882-886.
- [20] Sharma, R. and Lobiyal, D.K. 2015. Proficiency Analysis of AODV, DSR and TORA Ad-hoc Routing Protocols for Energy Holes Problem in Wireless Sensor Networks. Elsevier, Procedia Computer Science, 57: 1057-1066.
- [21] Sharma, R. 2015. Energy Holes Avoiding Techniques in Sensor Networks: A survey. International Journal of Engineering Trends and Technology, 20(4): 204-208.
- [22] Sharma, R. and Lobiyal, D.K. 2015. Multi-Gateway-Based Energy Holes Avoidance Routing Protocol for WSN. Informatics, 3(2): 1-26.
- [23] Devi, J. Bhatia, K. and Sharma, R. 2017. A Relative Analysis of Programmed Web Testing Tools. International Research Journal of Engineering and Technology, 4(5): 386-389.
- [24] Devi, J. Bhatia, K. and Sharma, R. 2017. A Study on Functioning of Selenium Automation Testing Structure. International Journal of Advanced Research in Computer Science and Software Engineering, 7(5): 855-862.
- [25] Labhade, C.K. 2016. Android Based Map Location Tracking System without using Internet. International Journal of Advanced Research in Computer Science, 7(1): 37-39.
- [26] Rasool, R., Sabarinathan, K., Suresh, M., Syed, S. H. and Ragavan. 2014. 24 Hours GPS Tracking in Android Operating System. International Journal of Scientific and Research Publications, 4(3):1-5.

