

DECISION SUPPORT SYSTEM OF A FINANCIAL INSTITUTION

IEE 505 FINAL PROJECT- FALL 2017



PROJECT BY:

Viren Bhanushali

Venkat Akhil Korthiwada

Jay Bhanushali

Rohit Taparia

UNDER THE GUIDANCE OF:

DR. TERESA WU

TABLE OF CONTENTS

INTRODUCTION:	3
USER REQUIREMENTS:	4
DATABASE DESIGN:	5
DATABASE SETUP AND APPLICATION DESIGN:	6
RELATIONAL MODEL:	8
USER INTERFACE:	9
WELCOME SCREEN	9
DATABASE:	10
UPDATE:	11
FINANCIAL INSTRUMENTS:	13
INVESTORS:	13
GRAPHS & REPORTS:	15
SUMMARY:	15
REPORTS:	16
QUERIES:	22
CONCLUSIONS:	26
REFERENCES.....	27

INTRODUCTION:

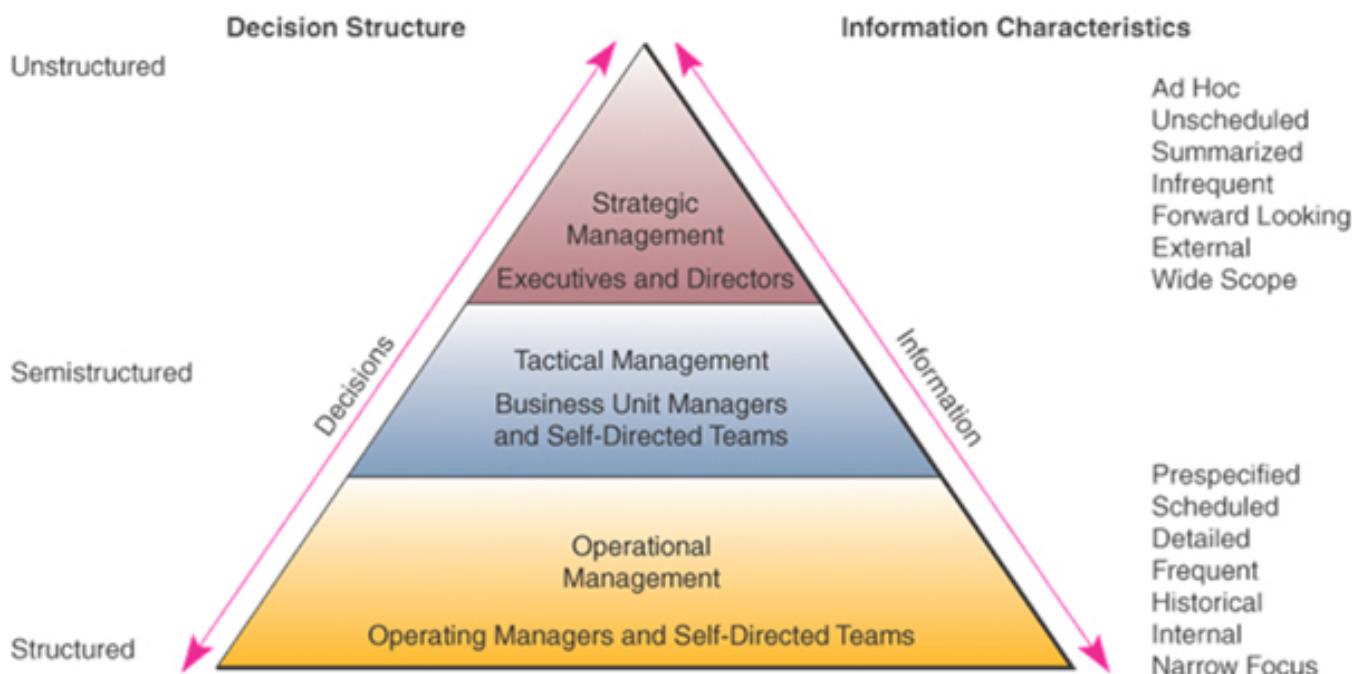
The aim of this project is to create a decision support system for a financial institution. The institution raises funds by issuing shares and debentures; accepting deposits from the general public/institutions; etc. These funds are then used to subsidize investments. The company is interested in computerizing these operations.

USER REQUIREMENTS:

In the case of financial institutions, decision-making becomes even more critical, given large quantities of data and incomplete knowledge and understanding of available alternatives

As much as it is critical, decision making is a complex task, because banks typically depend on three types of decision making, i.e. Operational, Tactical and Strategic.

All 3 deal with different dimensions of the bank's performance; from the routine / operational to strategic / long-term, thus making the process complex. Coherence between these different levels is essential and that too amidst increasing complexity of a bank's operations.



The opportunity cost of not having the right information at any or all of these levels can have significant impact on the bank's current and future performance. We have seen that decision making is based on information that the decision maker is gathering.

So, a good decision support system (DSS) must be able to take in the mass of information and extract the best alternatives that can help make optimal decisions. For organizations with larger and ever changing data sets, a computer-based information system supports and hastens decision-making. DSS serve the organization's management, operations, and planning functions and aid decision making, which may be rapidly changing and not easily specified in advance.

A properly designed DSS is an interactive software-based system – a business intelligence system that is intended to help decision makers compile useful information from a combination of raw data, documents, personal knowledge, or business models to identify and solve problems and make decisions.

DATABASE DESIGN:

For each entity type, we provide some of the corresponding attributes. The following are the main entity types:

1. **BORROWER**: The main attributes are identification number, name, address, telephone number, e-mail address, type, current balance, etc.
2. **INVESTOR**: The main attributes are identification number, name, address, telephone number, e-mail address, type, current balance, etc.
3. **INVESTMENT**: The main attributes are identification number, type, etc
4. **DEBENTURE**: The main attributes are date, invest ID, amount invested, rate of interest, number of months, current amount, interest amount etc.
5. **SHARES**: The main attributes are date, share value, number of shares, value invested, dividends, share number, I Id.
6. **FIXED DEPOSITS**: The main attributes are present date, scheme type, rate of interest, amount invested, amount now, duration month, fd number etc.

FIXED DEPOSITS: Fixed deposits are investments that have a fixed duration. The terms of the investment may be for one, two, or three years. The investor can choose to either collect the interest from the investment periodically and the principal at maturity (Scheme 1) or collect the

interest and principal at maturity (Scheme 2). In the case that investors select Scheme 1, they may choose to get interest payments four times, twice, or once a year

DEBENTURES: Debentures are issued for periods of one, two, or three years. Debentures could be either convertible or non-convertible. Convertible debentures can be converted to equity shares on maturity. For the purpose of this project we assume that debentures pay an interest rate of 13%.

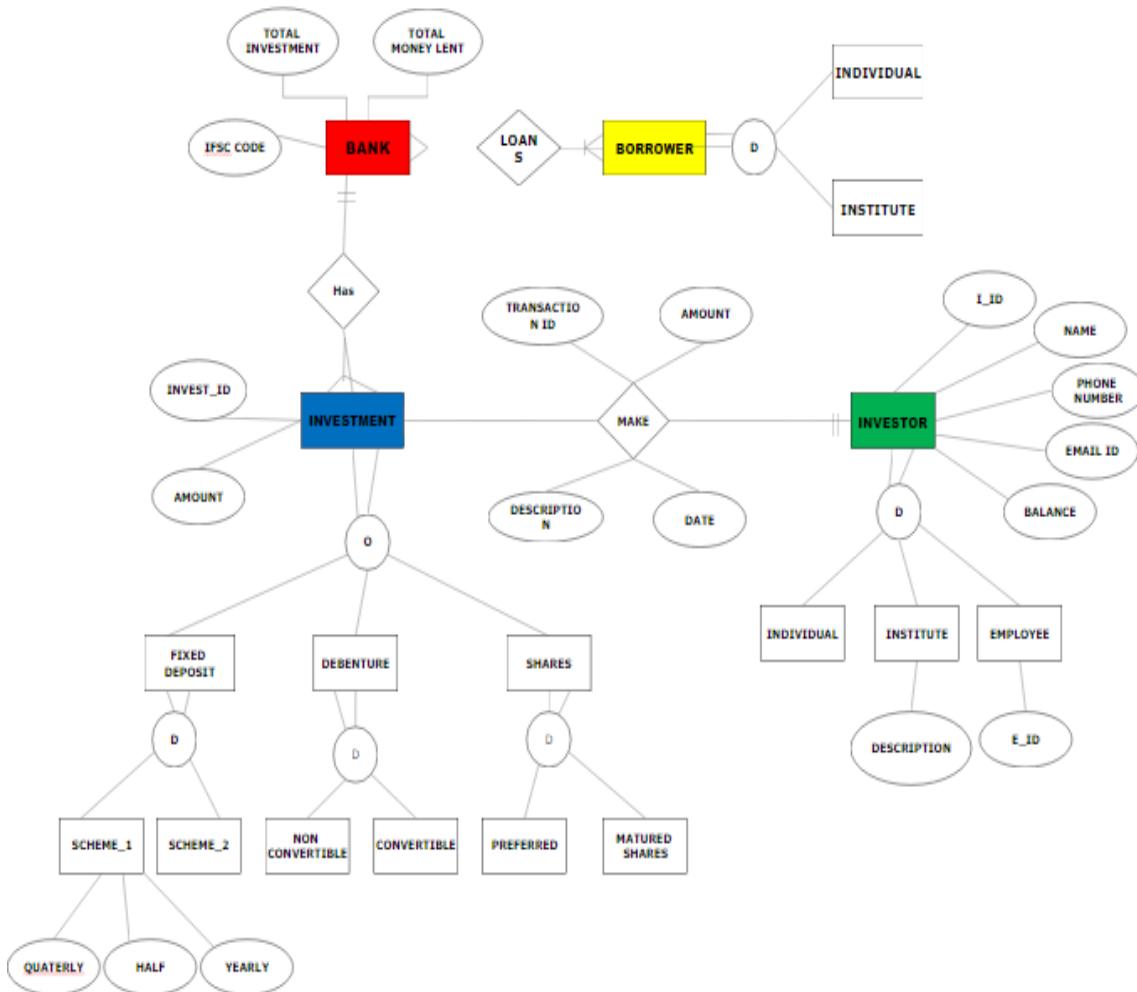
SHARES: Shares are classified as equity shares or preferred shares. The dividend to be paid to investors is declared at the end of the year. The institution lends the money to individuals or other institutions. The amount of interest charged depends on the amount of money borrowed and duration of the loan.

DATABASE SETUP AND APPLICATION DESIGN:

The ER Diagram of the decision support system for “VVRJ BANK” is as shown below:

The main entities are: BANK, BORROWER, INVESTMENT, INVESTOR.

NOTE: All the data used in this database is generated on our own and might not represent the data properties of real financial institution.



RELATIONAL MODEL:

INVESTOR

I_ID	NAME	PHONE_NUMBER	EMAIL	BALANCE	INVESTOR_TYPE
------	------	--------------	-------	---------	---------------

FIXED DEPOSITS

FD_NO	INVEST_ID	I_ID	T_ID	DATE	SCHEME1_TYPE	SCHEME2_BOO	AMT_INVESTED	AMT_NOW	YEAR_PLAN	DESC.
-------	-----------	------	------	------	--------------	-------------	--------------	---------	-----------	-------

DEBENTURES

DEB_NO	INVEST_ID	I_ID	T_ID	DEB_TYPE	DATE	AMT_INVESTED	AMT_NOW	YEAR_PLAN	MAT_VALUE	DESC
--------	-----------	------	------	----------	------	--------------	---------	-----------	-----------	------

SHARES

SHARE_NUMBER	INVEST_ID	I_ID	T_ID	SHARE_TYPE	NO_OF SHARES	SHARE_VALUE	SHARE_VALUE_I	AMT_INVESTED	AMT_NOW
--------------	-----------	------	------	------------	--------------	-------------	---------------	--------------	---------

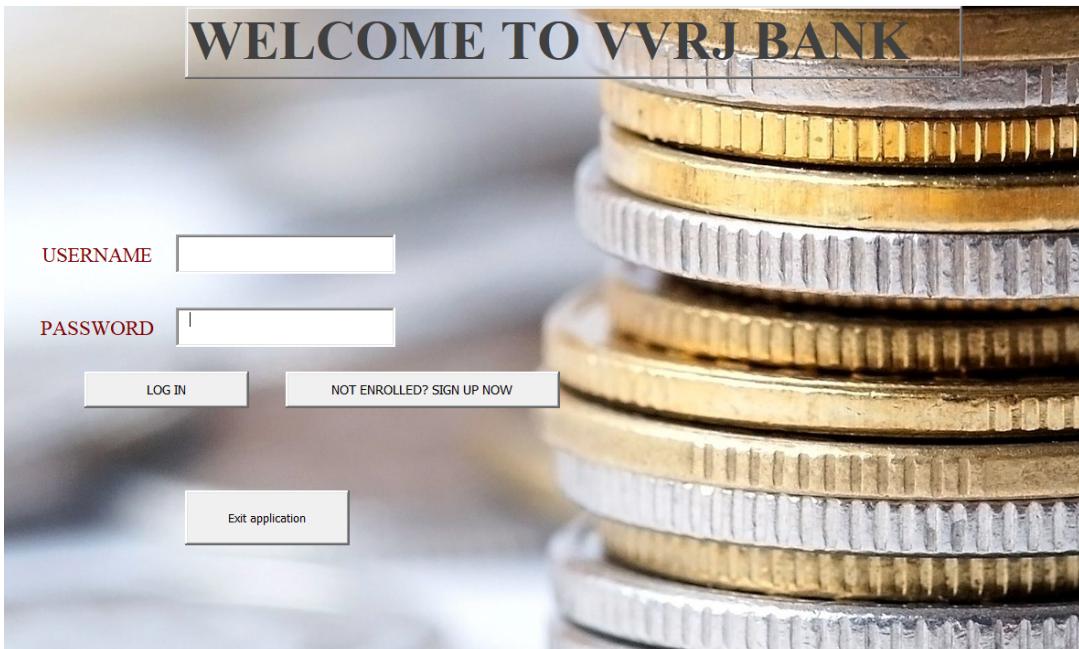
BORROWER

B_ID	T_ID	NAME	ADDRESS	PHONE_NO	BORROWER_TYPE	INVESTMENT_RATE	AMT_LENT
------	------	------	---------	----------	---------------	-----------------	----------

USER INTERFACE: WELCOME SCREEN:



After clicking on the “USE VVRJ BANK APPLICATION” , the next window that opens is as shown below:

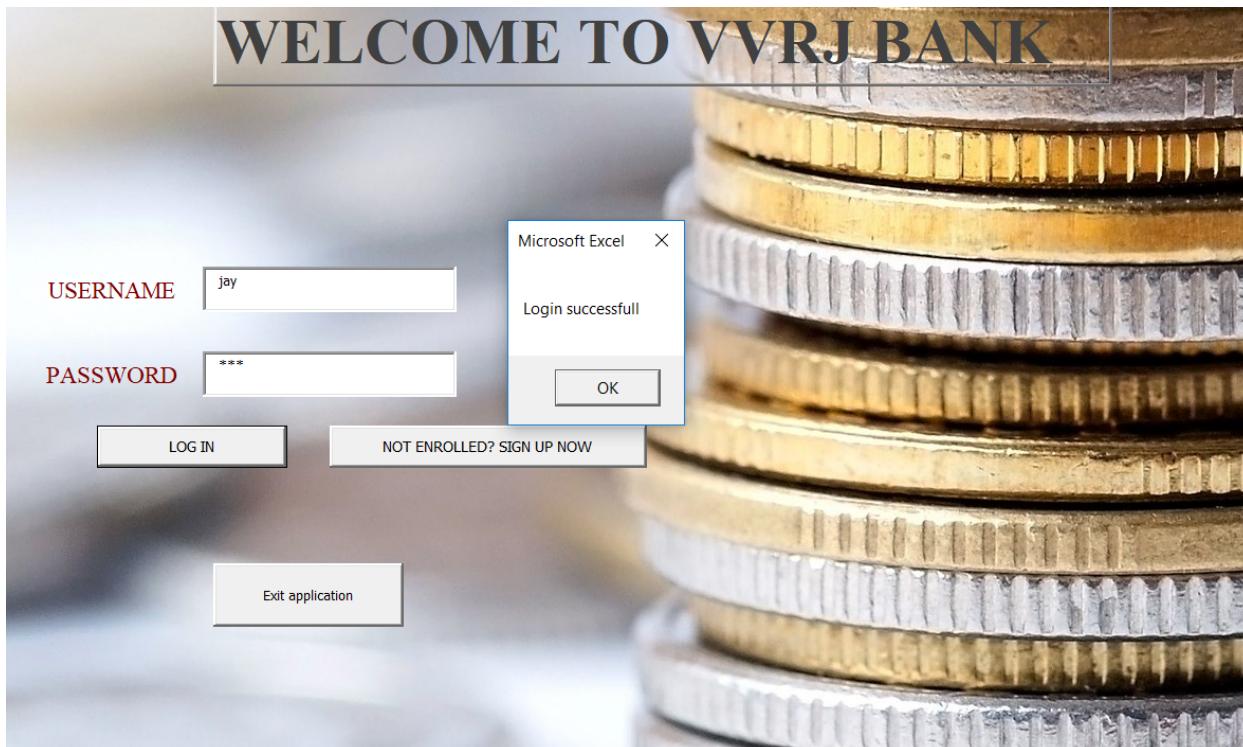


The user has 3 options to continue with: Log In, Sign Up and Exit.

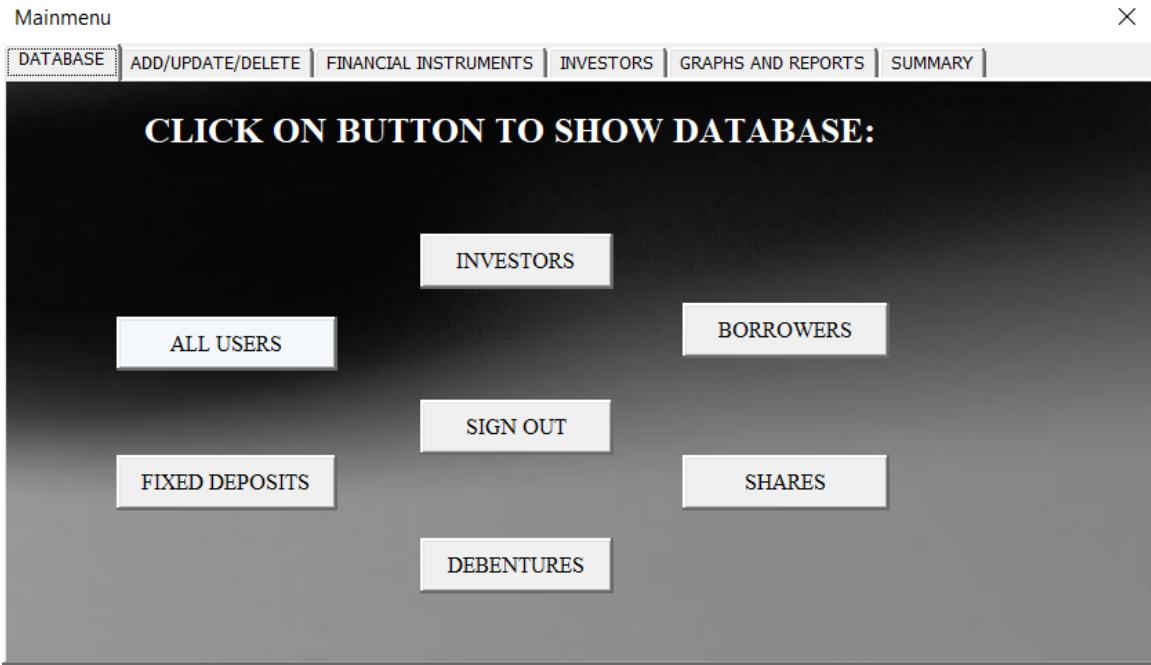
The Users will select the login based on their role. They will enter the username and password. If the username and password are not matching with the ones in database then the welcome page will be shown with a popup saying “Incorrect Username or Password”



If the username and password put is correct, then the popup shows the message “Login Successful”.



DATABASE:

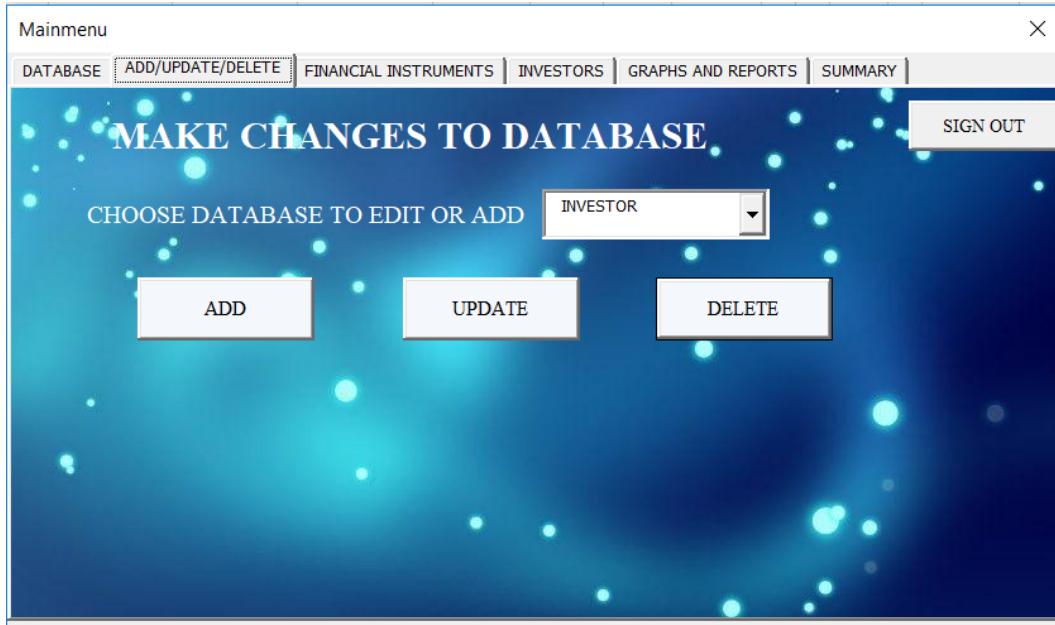


After logging in, the user has a number of options and can select these options by clicking on the desired tab. For example, when the user clicks on database, a window as shown in the above image pops up. When the user clicks on the “INVESTORS” button, the result is as shown:

A	B	C	D
1 A.Rodgers	A.Rodgers@gmail.com	A.Rodgers	INVESTOR
2 T.Brady	T.Brady@gmail.com	T.Brady	INVESTOR
3 D.Brees	D.Brees@gmail.com	D.Brees	INVESTOR
4 A.Luck	A.Luck@gmail.com	A.Luck	INVESTOR
5 M.Ryan	M.Ryan@gmail.com	M.Ryan	INVESTOR
6 R.Wilson	R.Wilson@gmail.com	R.Wilson	INVESTOR
7 K.Cousins	K.Cousins@gmail.com	K.Cousins	INVESTOR
8 M.Stafford	M.Stafford@gmail.com	M.Stafford	INVESTOR
9 D.Prescott	D.Prescott@gmail.com	D.Prescott	INVESTOR
10 C.Newton	C.Newton@gmail.com	C.Newton	INVESTOR
11 M.Mariota	M.Mariota@gmail.com	M.Mariota	INVESTOR
12 J.Winston	J.Winston@gmail.com	J.Winston	INVESTOR
13 A.Dalton	A.Dalton@gmail.com	A.Dalton	INVESTOR
14 T.Taylor	T.Taylor@gmail.com	T.Taylor	INVESTOR
15 B.Bortles	B.Bortles@gmail.com	B.Bortles	INVESTOR
16 D.Carr	D.Carr@gmail.com	D.Carr	INVESTOR
17 J.Flacco	J.Flacco@gmail.com	J.Flacco	INVESTOR
18 D.Johnson	D.Johnson@gmail.com	D.Johnson	INVESTOR
19 C.Wentz	C.Wentz@gmail.com	C.Wentz	INVESTOR
20 E.Manning	E.Manning@gmail.com	E.Manning	INVESTOR
21 P.Rivers	P.Rivers@gmail.com	P.Rivers	INVESTOR
22 B.Roethlisberger	B.Roethlisberger@gmail.com	B.Roethlisberger	INVESTOR
23 L.Bell	L.Bell@gmail.com	L.Bell	INVESTOR
24 C.Palmer	C.Palmer@gmail.com	C.Palmer	INVESTOR
25 S.Bradford	S.Bradford@gmail.com	S.Bradford	INVESTOR
26 A.Smith	A.Smith@gmail.com	A.Smith	INVESTOR
27 M.Glennon	M.Glennon@gmail.com	M.Glennon	INVESTOR
28 J.Ajayi	J.Ajayi@gmail.com	J.Ajayi	INVESTOR
29 M.Gordon	M.Gordon@gmail.com	M.Gordon	INVESTOR
30 D.Watson	D.Watson@gmail.com	D.Watson	INVESTOR
31 C.Kessler	C.Kessler@gmail.com	C.Kessler	INVESTOR
32 D.Murray	D.Murray@gmail.com	D.Murray	INVESTOR
33 J.Howard	J.Howard@gmail.com	J.Howard	INVESTOR
34 T.Gurley	T.Gurley@gmail.com	T.Gurley	INVESTOR

ADD/ UPDATE/ DELETE:

The second option tab is UPDATE. When we press this tab, the following window pops up:



When we further select the ADD button, the user form that pops up is as shown below:

UserForm2

X

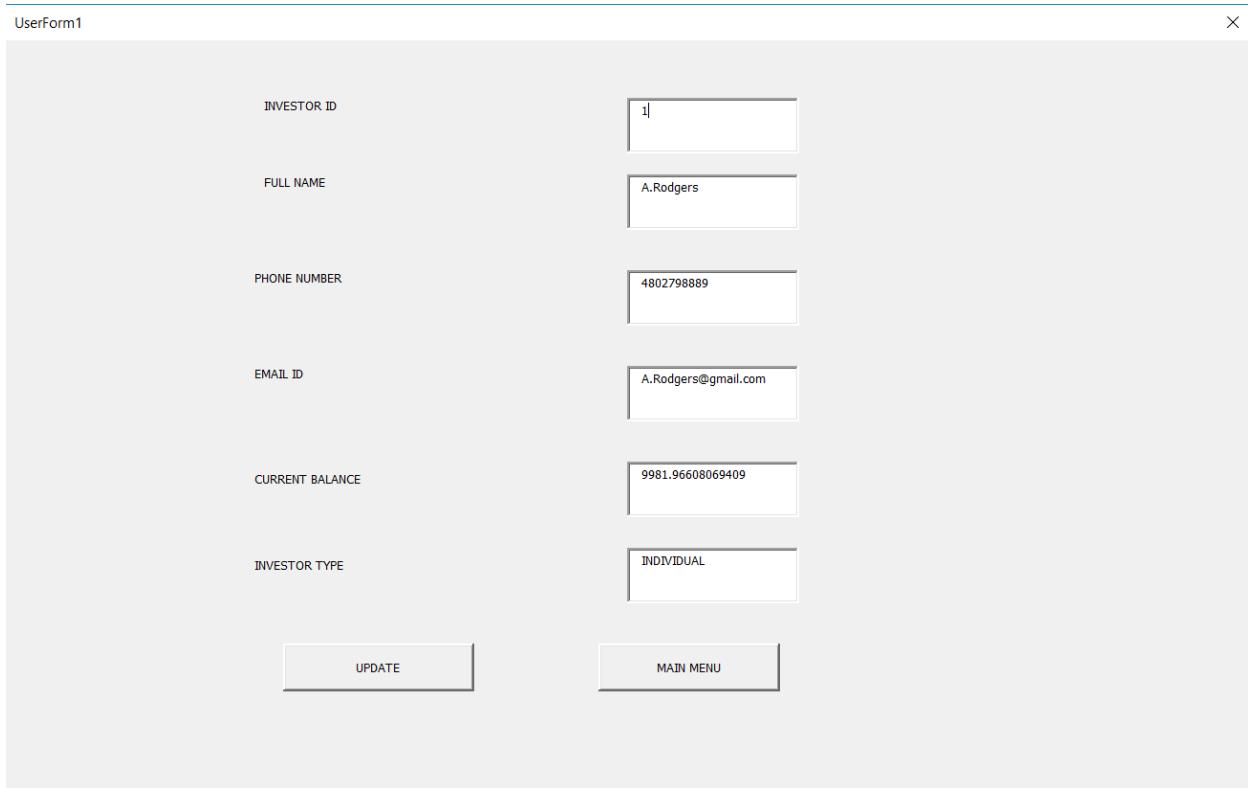
INVESTOR ID	<input type="text"/>
FULL NAME	<input type="text"/>
PHONE NUMBER	<input type="text"/>
EMAIL ID	<input type="text"/>
CURRENT BALANCE	<input type="text"/>
INVESTOR TYPE	<input type="text"/>
<input type="button" value="ADD INVESTOR"/>	<input type="button" value="Main menu"/>

When we further select the UPDATE button, the user form that pops up is as shown below:

UserForm1

INVESTOR ID	<input type="text" value="1"/>
FULL NAME	<input type="text" value="A.Rodgers"/>
PHONE NUMBER	<input type="text" value="4802798889"/>
EMAIL ID	<input type="text" value="A.Rodgers@gmail.com"/>
CURRENT BALANCE	<input type="text" value="9981.96608069409"/>
INVESTOR TYPE	<input type="text" value="INDIVIDUAL"/>

X



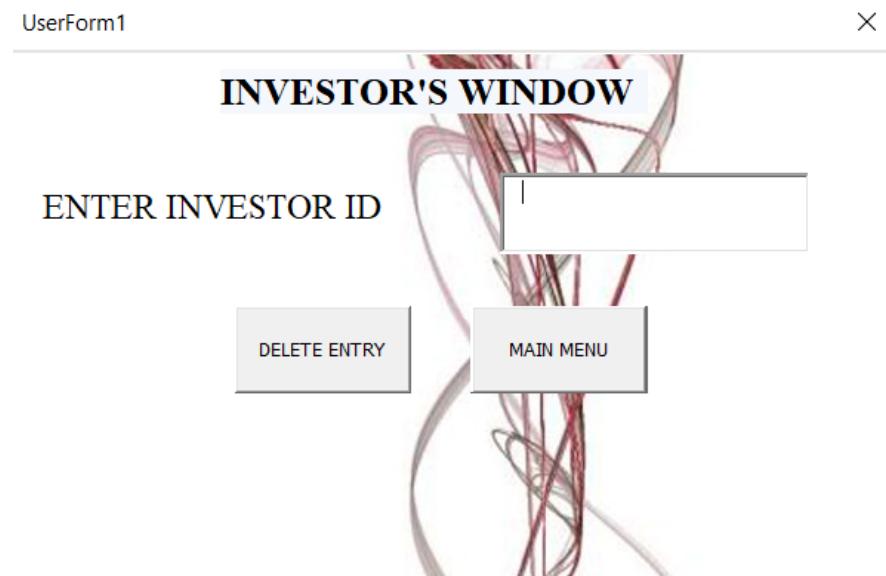
When we further select the DELETE button, the user form that pops up is as shown below:

UserForm1

X

INVESTOR'S WINDOW

ENTER INVESTOR ID

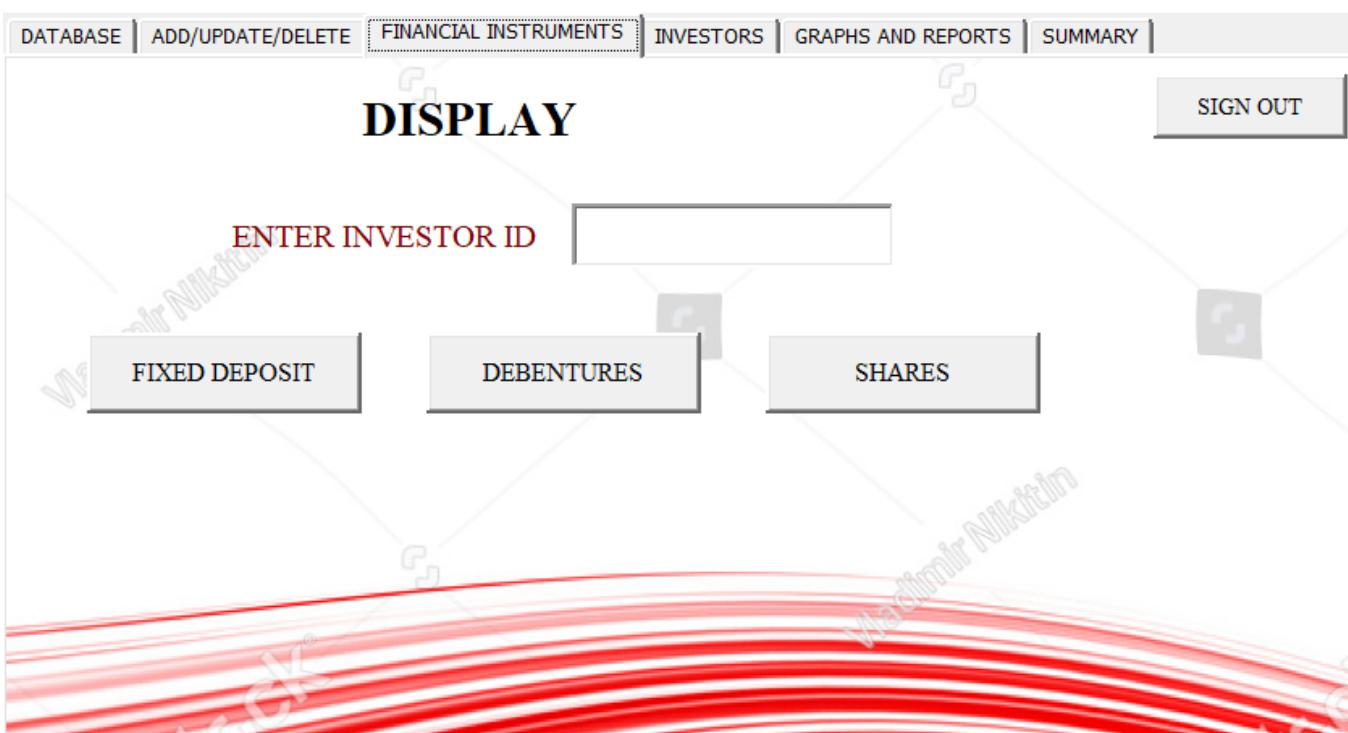


FINANCIAL INSTRUMENTS:

The third option tab is FINANCIAL INSTRUMENTS. When we press this tab, the following window pops up:

Mainmenu

X



When we select the FIXED DEPOSITS button, a list of data is generated. The following snap is one of the rows that is being generated in the fixed deposits table.

17	1	Q	0	5	45000	47250	2250	T7	6/21/2017
----	---	---	---	---	-------	-------	------	----	-----------

INVESTORS:

Mainmenu

X

DATABASE | ADD/UPDATE/DELETE | FINANCIAL INSTRUMENTS | INVESTORS | GRAPHS AND REPORTS | SUMMARY |

INVESTOR BALANCE DETAILS

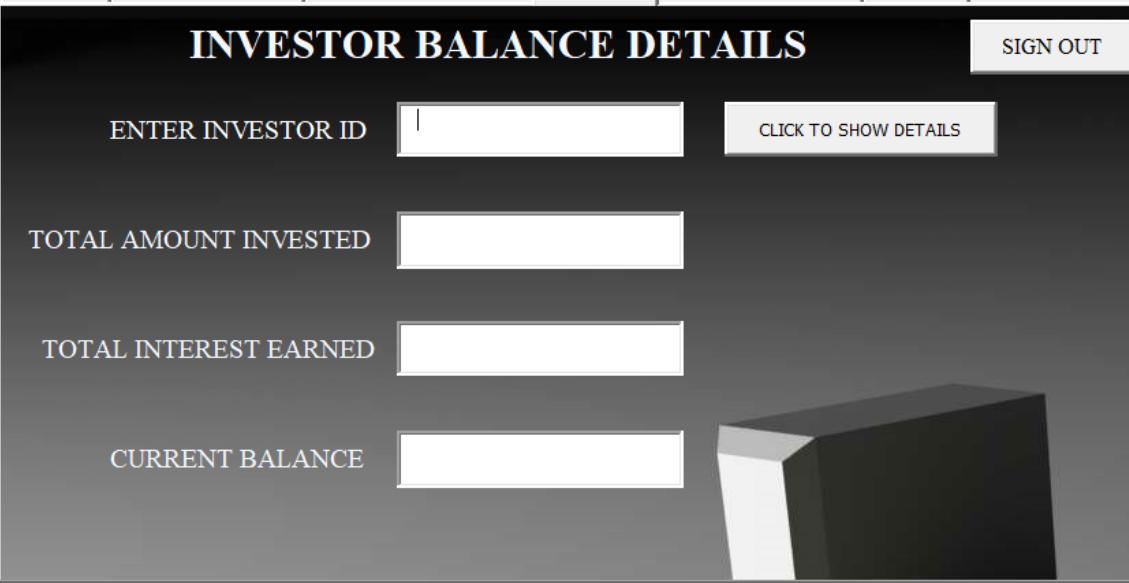
SIGN OUT

ENTER INVESTOR ID CLICK TO SHOW DETAILS

TOTAL AMOUNT INVESTED

TOTAL INTEREST EARNED

CURRENT BALANCE



After entering the Investor ID in the 1st textbox, we get the total amount invested, total interest amount and current balance in following textboxes.

Mainmenu

X

DATABASE | ADD/UPDATE/DELETE | FINANCIAL INSTRUMENTS | INVESTORS | GRAPHS AND REPORTS | SUMMARY |

INVESTOR BALANCE DETAILS

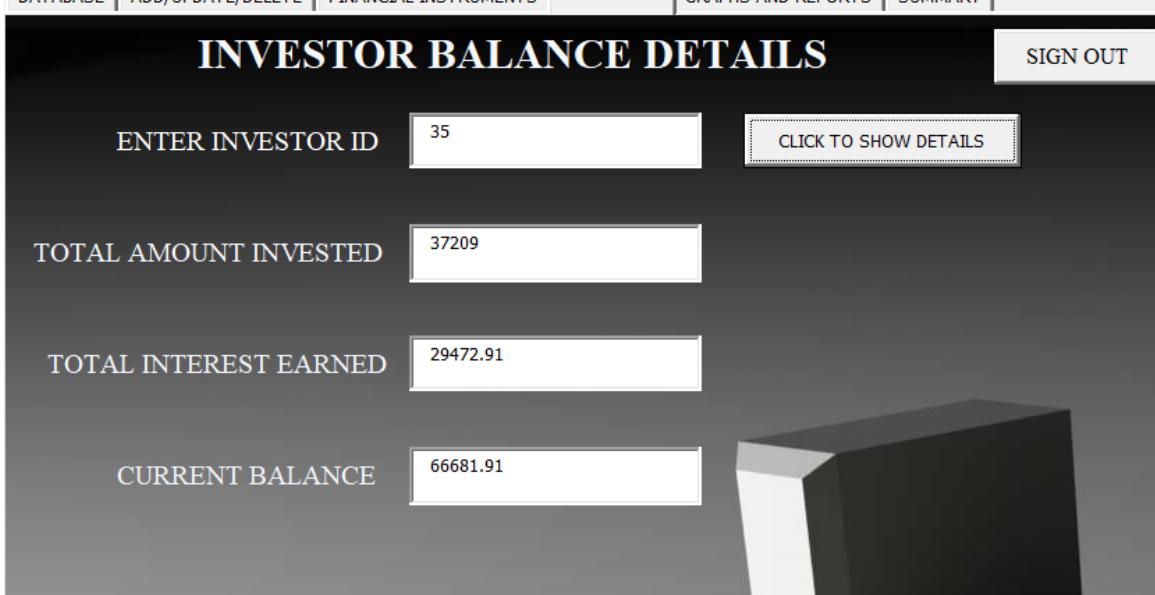
SIGN OUT

ENTER INVESTOR ID CLICK TO SHOW DETAILS

TOTAL AMOUNT INVESTED

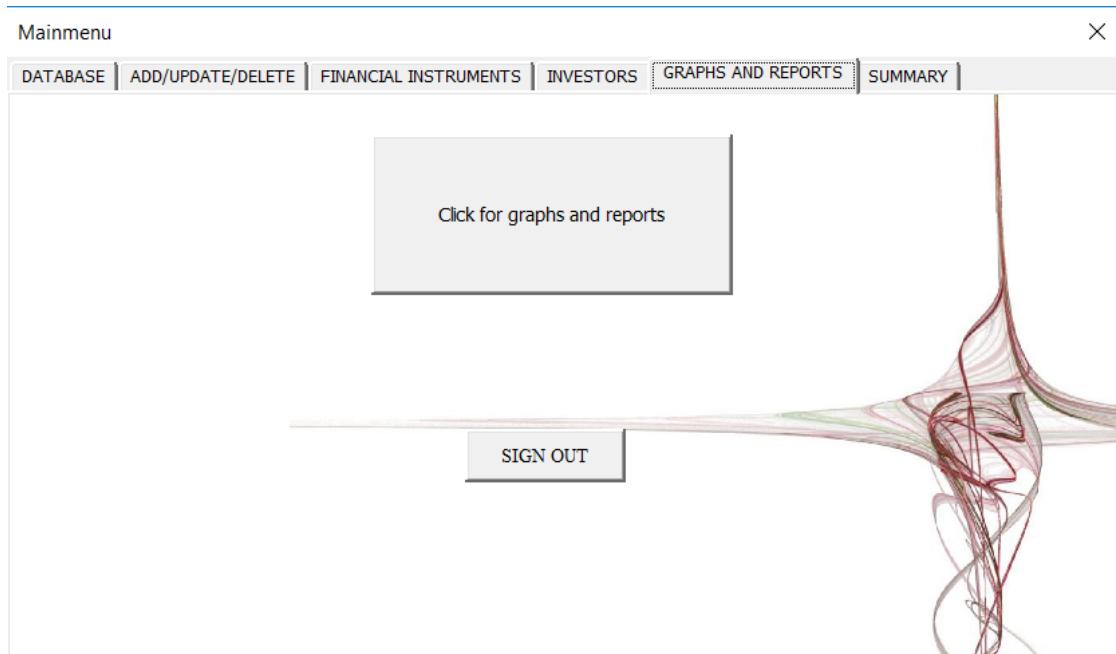
TOTAL INTEREST EARNED

CURRENT BALANCE

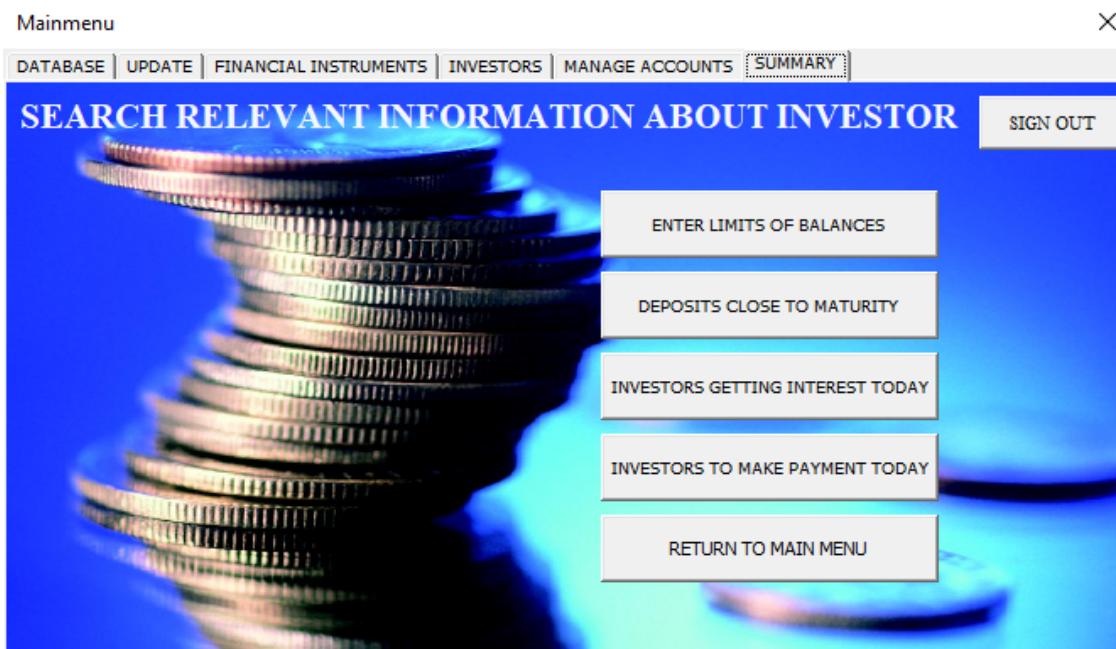


GRAPHS & REPORTS:

The next tab in the main menu is Graphs & Reports.



SUMMARY:



REPORTS:

The above report shows the setup for the information regarding investors who will receive the payments from dividends that are obtained from shares at the end of current year, i.e, 2017

Investors who will Receive Payments at the end of current Year				<input type="button" value="SUBMIT"/>	<input type="button" value="CLEAR ALL"/>
I_ID	NAME	BALANCE	AMOUNT INVESTED IN SHARES	EXPECTED AMOUNT TO BE PAID	
40	P.Perkins	6745.73	2731	599	
41	L.Miller	25031.38	2564	1896	
42	J.Goff	106322.26	2199	2771	
43	E.Catt	104051.05	1506	3244	
45	J.Crevell	49037.18	586	334	
46	S.Ware	64807.59	2403	687	
47	B.Powell	56250	3527	1473	
48	E.Lacy	8772.55	1189	871	
51	M.Gillistlee	50793.12	1241	3169	
52	A.Peterson	10936.58	3365	265	
53	D.Cook	93418.08	720	2021	
54	T.Coleman	94702.37	813	547	
55	T.Montgomery	91378.77	95	325	
56	J.Cutler	66214.52	141	2329	
58	J.Mixon	12324.24	2184	1436	
59	S.Kerrine	99656.48	2491	529	
60	J.Bleunt	54457.72	652	881	
62	D.Martin	27210.16	2281	1089	
64	A.Abdullah	33994.46	775	3975	
65	L.Murray	6975.3	117	13	
67	R.Melley	6073.43	1629	2880	
70	M.Witte	48254.46	22	3860	
71	D.Henry	63164.9	3807	983	
72	J.Jones	67738.96	1105	425	
74	A.Brown	11368.16	2526	1304	
88	A.Cooper,PVT,LTD	58232.34	2839	62261	
89	B.Davis,PVT,LTD	24520.34	5660	5444	
90	C.Apples,PVT,LTD	42429.22	1398	29546	
91	S.Verseen,PVT,LTD	30118.62	2831	13849	
92	T.Ridlick,PVT,LTD	51180.02	2376	34904	
93	B.Cooks,PVT,LTD	47114.72	5072	71458	
94	C.Prosise,PVT,LTD	16410.8	11336	49534	
95	J.Perry,PVT,LTD	20240.54	8655	81275	
96	K.Lockett,PVT,LTD	68376.76	1623	51375	
97	C.Thompson,PVT,L	45122.24	7789	29551	
98	R.Gronkowski,PVT,	9652.44	14543	50877	
99	R.Turbin,PVT,LTD	106486.99	17335	10065	
200	Avery Bradley PVT LTD	1366400.6	16546	30114	
201	Dennis Williams,PV	1344392.18	18888	47021	
202	J.Taylor,PVT,LTH	11810.68	552	5686	
203	Rudy Gay PVT LTD	7748722.76	56466	44	
204	Karl-Anthony Town	9627739.09	54988	7622	
205	Enes Kanter PVT LT	7690570.19	15494	80486	
206	Julius Randle	66956.65	48	52	
207	Jae Crowder	26403.97	644	1296	
209	Evan Fournier	6542.8	488	102	

When we press the “SUBMIT” button, the information of the investors in the form of name, balance, amount invested in shares and expected amount to be paid are displayed. The “CLEAR” button clears the data and brings back the original form.

A	B	C	D	E	F	G	H	I	J	K	L
1	2	3	4	INFORMATION ABOUT AMOUNT INVESTED IN THE CURRENT YEAR						<input type="button" value="CLEAR ALL"/>	
5	6	7	8	<input type="button" value="FIXED DEPOSITS"/>	<input type="button" value="DEBENTURES"/>	<input type="button" value="SHARES"/>					
9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44

This report primarily provides the information regarding the information of the amount invested in fixed deposits, debentures and shares respectively. There are 3 buttons that are available, namely, “FIXED DEPOSITS”, “DEBENTURES” and “SHARES” that provide the information of the particular investor in each of the above instrument. The “CLEAR ALL” button clears the information that was being displayed at that moment.

A	B	C	D	E	F	G	H	I	J	K	L	M
1	2	3	4	INFORMATION ABOUT AMOUNT INVESTED IN THE CURRENT YEAR						<input type="button" value="CLEAR ALL"/>		
5	6	7	8	<input type="button" value="FIXED DEPOSITS"/>	<input type="button" value="DEBENTURES"/>	<input type="button" value="SHARES"/>						
9	10	11	12	13	14	15	16	17	18	19	20	21
22	23	24	25	26	27	28	29	30	31	32	33	34
35	36	37	38	39	40	41	42	43	44	45	46	47
48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73
74	75	76	77	78	79	80	81	82	83	84	85	86
87	88	89	90	91	92	93	94	95	96	97	98	99
100	101	102	103	104	105	106	107	108	109	110	111	112
113	114	115	116	117	118	119	120	121	122	123	124	125
126	127	128	129	130	131	132	133	134	135	136	137	138
139	140	141	142	143	144	145	146	147	148	149	150	151
152	153	154	155	156	157	158	159	160	161	162	163	164
165	166	167	168	169	170	171	172	173	174	175	176	177
178	179	180	181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200	201	202	203
204	205	206	207	208	209	210	211	212	213	214	215	216
217	218	219	220	221	222	223	224	225	226	227	228	229
230	231	232	233	234	235	236	237	238	239	240	241	242
243	244	245	246	247	248	249	250	251	252	253	254	255
256	257	258	259	260	261	262	263	264	265	266	267	268
269	270	271	272	273	274	275	276	277	278	279	280	281
282	283	284	285	286	287	288	289	290	291	292	293	294
295	296	297	298	299	300	301	302	303	304	305	306	307
308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333
334	335	336	337	338	339	340	341	342	343	344	345	346
347	348	349	350	351	352	353	354	355	356	357	358	359
360	361	362	363	364	365	366	367	368	369	370	371	372
373	374	375	376	377	378	379	380	381	382	383	384	385
386	387	388	389	390	391	392	393	394	395	396	397	398
399	400	401	402	403	404	405	406	407	408	409	410	411
412	413	414	415	416	417	418	419	420	421	422	423	424
425	426	427	428	429	430	431	432	433	434	435	436	437
438	439	440	441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460	461	462	463
464	465	466	467	468	469	470	471	472	473	474	475	476
477	478	479	480	481	482	483	484	485	486	487	488	489
490	491	492	493	494	495	496	497	498	499	500	501	502
503	504	505	506	507	508	509	510	511	512	513	514	515
516	517	518	519	520	521	522	523	524	525	526	527	528
529	530	531	532	533	534	535	536	537	538	539	540	541
542	543	544	545	546	547	548	549	550	551	552	553	554
555	556	557	558	559	560	561	562	563	564	565	566	567
568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593
594	595	596	597	598	599	600	601	602	603	604	605	606
607	608	609	610	611	612	613	614	615	616	617	618	619
620	621	622	623	624	625	626	627	628	629	630	631	632
633	634	635	636	637	638	639	640	641	642	643	644	645
646	647	648	649	650	651	652	653	654	655	656	657	658
659	660	661	662	663	664	665	666	667	668	669	670	671
672	673	674	675	676	677	678	679	680	681	682	683	684
685	686	687	688	689	690	691	692	693	694	695	696	697
698	699	700	701	702	703	704	705	706	707	708	709	710
711	712	713	714	715	716	717	718	719	720	721	722	723
724	725	726	727	728	729	730	731	732	733	734	735	736
737	738	739	740	741	742	743	744	745	746	747	748	749
750	751	752	753	754	755	756	757	758	759	760	761	762
763	764	765	766	767	768	769	770	771	772	773	774	775
776	777	778	779	780	781	782	783	784	785	786	787	788
789	790	791	792	793	794	795	796	797	798	799	800	801
802	803	804	805	806	807	808	809	810	811	812	813	814
815	816	817	818	819	820	821	822	823	824	825	826	827
828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853
854	855	856	857	858	859	860	861	862	863	864	865	866
867	868	869	870	871	872	873	874	875	876	877	878	879
880	881	882	883	884	885	886	887	888	889	890	891	892
893	894	895	896	897	898	899	900	901	902	903	904	905
906	907	908	909	910	911	912	913	914	915	916	917	918
919	920	921	922	923	924	925	926	927	928	929	930	931
932	933	934	935	936	937	938	939	940	941	942	943	944
945	946	947	948	949	950	951	952	953	954	955	956	957
958	959	960	961	962	963	964	965	966	967	968	969	970
971	972	973	974	975	976	977	978	979	980	981	982	983
984	985	986	987	988	989	990	991	992	993	994	995	996
997	998	999	999	999	999	999	999	999	999	999	999	999

The above image shows the information that has been played when we press the “FIXED DEPOSITS” button. It displays the information of the given investors who have amount invested in FIXED DEPOSITS.

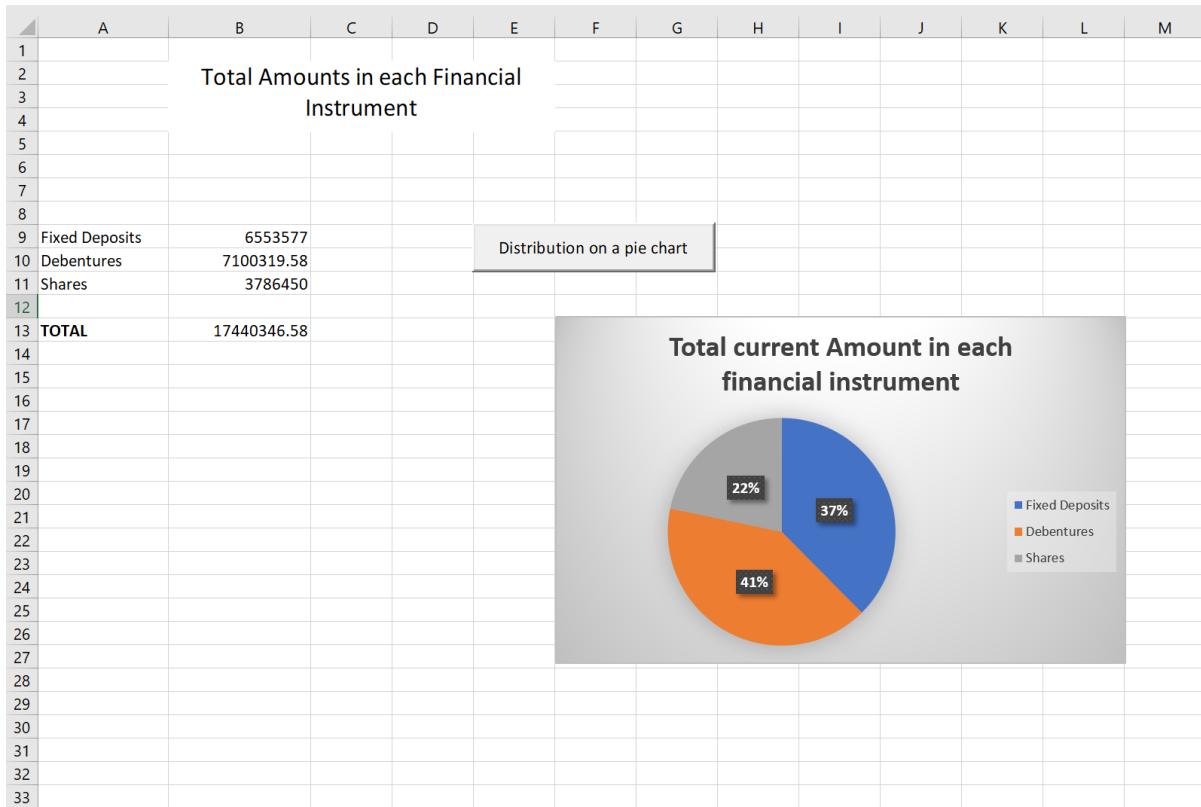
The report that is shown below represents the information regarding the amount of money lent by a given individual or institution over the years.

A	B	C	D	E	F	G	H	I	J	K	L
1	2	3	4	INFORMATION ABOUT AMOUNT LENT							5
6	7	8	9	INDIVIDUALS			INSTITUTIONS				10
B_ID	NAME	ADDRESS	PHONE NUMBER	EMAIL ID	AMOUNT LENT	CURRENT REPAYMENT AMOUNT	INTEREST RATE				
12	B39	T Courtous PVT LTD	North Carolina	4803531473 T Courtous PVT LTD@gmail.com	10348	11439	12%				
13	B40	W Caballero PVT LTD	Iowa	4802398383 W Caballero PVT LTD@gmail.com	9159	10215	12%				
14	B41	S Mandanda PVT LTD	New York	4802161148 S Mandanda PVT LTD@gmail.com	10560	11268	12%				
15	B42	W Hennessee PVT LTD	Texas	4801322067 W Hennessee PVT LTD@gmail.com	11050	10768	12%				
16	B43	J Pickford PVT LTD	Minnesota	4800679353 J Pickford PVT LTD@gmail.com	11425	10624	12%				
17	B44	J Robles PVT LTD	Maryland	4806186420 J Robles PVT LTD@gmail.com	11733	10680	12%				
18	B45	M Stekelenburg PVT LT	Utah	4803725293 M Stekelenburg PVT LT@gmail.com	11424	11533	12%				
19	B46	J Coleman PVT LTD	Texas	4802012321 J Coleman PVT LTD@gmail.com	11008	11222	12%				
20	B47	J Losni PVT LTD	Wyoming	4800634548 J Losni PVT LTD@gmail.com	11697	10984	12%				
21	B48	K Schmeichel PVT LTD	California	480725237 K Schmeichel PVT LTD@gmail.com	11831	11811	12%				
22	B49	R Zieler PVT LTD	Indiana	4805030458 R Zieler PVT LTD@gmail.com	10292	13645	12%				
23	B50	D Ward PVT LTD	California	4804524830 D Ward PVT LTD@gmail.com	10148	12190	12%				
24											
25											
26											
27											
28											
29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											
41											
42											
43											
44											
45											
46											
47											
48											
49											
50											

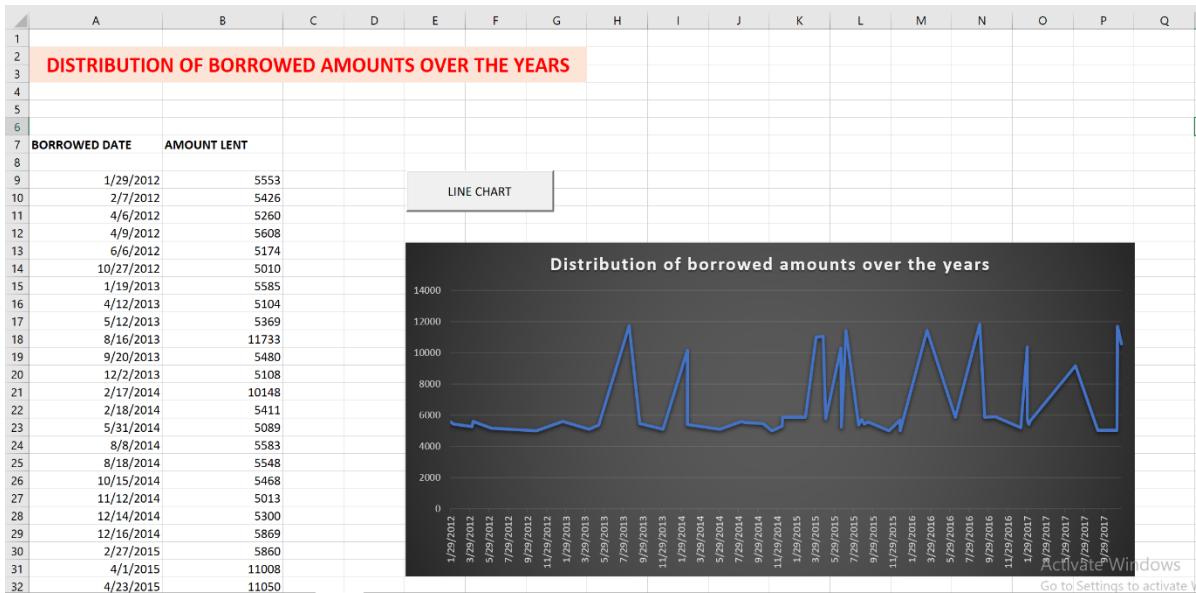
The above image shows the list of institutions and the relevant information regarding the amount of money lent over the years.

A	B	C	D	E	F	G	H	I	J	K	L
1	2	3	4	INFORMATION ABOUT AMOUNT LENT							5
6	7	8	9	INDIVIDUALS			INSTITUTIONS				10
B_ID	NAME	ADDRESS	PHONE NUMBER	EMAIL ID	AMOUNT LENT	CURRENT REPAYMENT AMOUNT	INTEREST RATE				
12	B1	D Ospina	Michigan	4806277230 D Ospina@gmail.com	5869	10320	13%				
13	B2	E Martinez	Texas	4807033469 E Martinez@gmail.com	5369	7357	13%				
14	B3	P Cech	Florida	4801151892 P Cech@gmail.com	5042	7118	13%				
15	B4	M Ryan	North Carolina	480449853 M Ryan@gmail.com	5006	5277	13%				
16	B5	N Maengaa	New York	480259563 N Maengaa@gmail.com	5108	6491	13%				
17	B6	A Begovic	California	4809017529 A Begovic@gmail.com	5860	5987	13%				
18	B7	A Boruc	Texas	4809142266 A Boruc@gmail.com	5089	5365	13%				
19	B8	A Federici	Ohio	4808553220 A Federici@gmail.com	5565	7193	13%				
20	B9	N Pope	Delaware	480800000 N Pope@gmail.com	5748	9005	13%				
21	B10	P Robinson	Georgia	4801545500 P Robinson@gmail.com	5174	7300	13%				
22	B11	T Heaton	Ohio	4809332469 T Heaton@gmail.com	5608	9678	13%				
23	B12	Eduardo	West Virginia	4809060218 Eduardo@gmail.com	5553	7839	13%				
24	B13	T Courtous	North Carolina	4806853165 T Courtous@gmail.com	5468	9200	13%				
25	B14	W Caballero	Virginia	4801527803 W Caballero@gmail.com	5426	9247	13%				
26	B15	S Mandanda	California	4805192411 S Mandanda@gmail.com	5899	8583	13%				
27	B16	W Hennessee	Maryland	4807725293 W Hennessee@gmail.com	5010	7052	13%				
28	B17	J Pickford	Georgia	4808032121 J Pickford@gmail.com	5548	6329	13%				
29	B18	J Robles	South Carolina	4802238344 J Robles@gmail.com	5260	8736	13%				
30	B19	M Stekelenburg	Ohio	4802905656 M Stekelenburg@gmail.com	5480	8567	13%				
31	B20	J Coleman	Indiana	4800884848 J Coleman@gmail.com	5377	7474	13%				
32	B21	J Losni	Texas	480799847 J Losni@gmail.com	5853	7755	13%				
33	B22	K Schmeichel	Louisiana	4803774282 K Schmeichel@gmail.com	5706	8859	13%				
34	B23	R Zieler	Kentucky	480800000 R Zieler@gmail.com	5007	8922	13%				
35	B24	D Ward	Indiana	4805073341 D Ward@gmail.com	5429	6194	13%				
36	B25	L Karus	Wisconsin	4807467294 L Karus@gmail.com	5583	8305	13%				
37	B26	S Mignolet	Connecticut	4807358784 S Mignolet@gmail.com	5104	8422	13%				
38	B27	D Ospina	Missouri	4809452887 D Ospina@gmail.com	5219	6011	13%				
39	B28	E Martinez	California	4806215896 E Martinez@gmail.com	5202	5822	13%				
40	B29	P Cech	Washington	4802154337 P Cech@gmail.com	5300	8630	13%				
41	B30	M Martinez	Florida	4808035300 M Martinez@gmail.com	5581	7007	13%				
42	B31	N Maengaa	Ohio	4809413462 N Maengaa@gmail.com	5046	5539	13%				
43	B32	A Begovic	Virginia	4804407454 A Begovic@gmail.com	5887	6693	13%				
44	B33	A Boruc	Ohio	4801199085 A Boruc@gmail.com	5780	8660	13%				
45	B34	A Federici	Missouri	4806017096 A Federici@gmail.com	5585	7824	13%				
46	B35	N Pope	Oklahoma	4809056515 N Pope@gmail.com	5706	7507	13%				
47	B36	P Robinson	Tennessee	4801950687 P Robinson@gmail.com	5411	9280	13%				
48	B37	T Heaton	Florida	4808037212 T Heaton@gmail.com	5013	6869	13%				
49	B38	Eduardo	Wisconsin	4809035356 Eduardo@gmail.com	5601	8028	13%				
50											
51											
52											

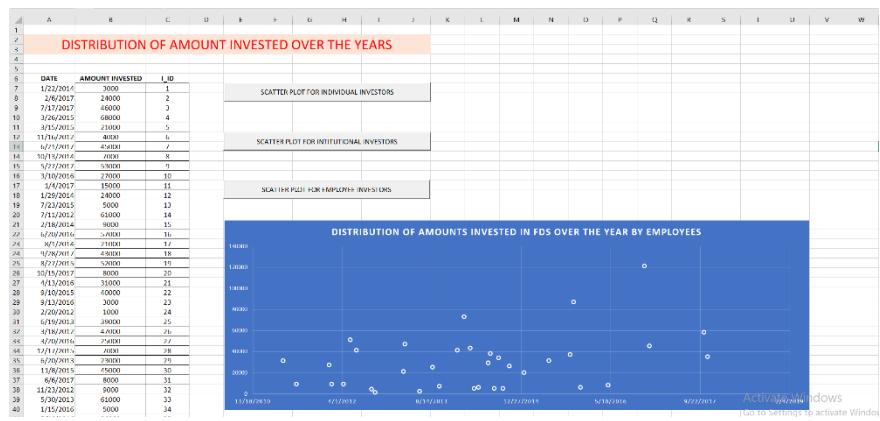
The above image shows the list of individuals and the relevant information regarding the amount of money lent over the years.



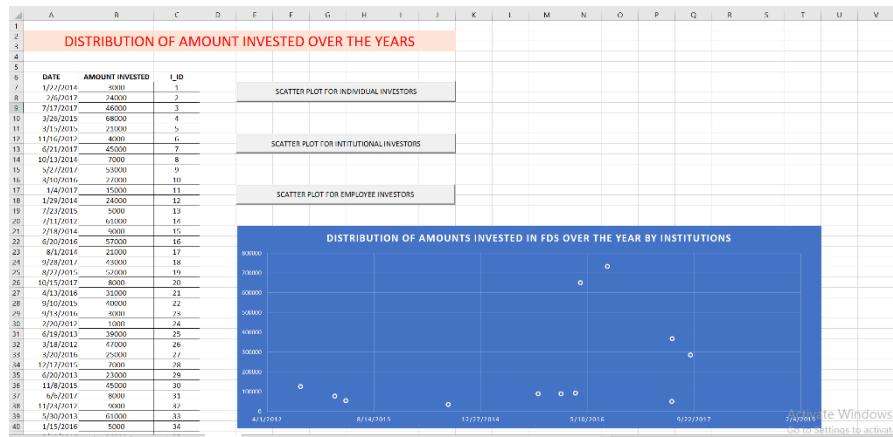
The above pie chart displays the proportion of the total amounts in each financial instrument, that is, fixed deposits, debentures and shares. The Button when clicked ,displays the pie chart .



The above report generates a line chart that gives the distribution of the borrowed amounts by all the financial instruments, i.e, FIXED DEPOSITS, DEBENTURES and SHARES over the years.



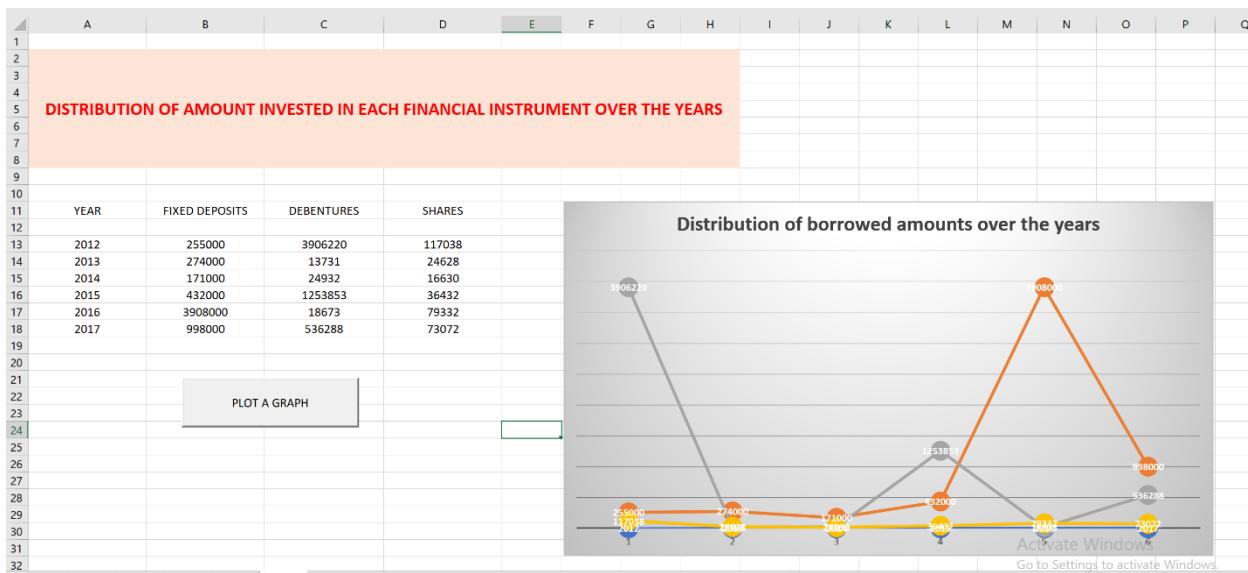
The representation above gives the distribution of amount invested in Fixed Deposits over the years in the form of a scatter plot for the investors.



The representation above gives the distribution of amount invested in Fixed Deposits over the years in the form of a scatter plot for the institutions.



The representation above gives the distribution of amount invested in Fixed Deposits over the years in the form of a scatter plot for the employees.



The line graph above represents the distribution of amount invested in each financial instruments , i.e, fixed deposits, debentures and shares over the years.

Each line represents a given financial instrument.

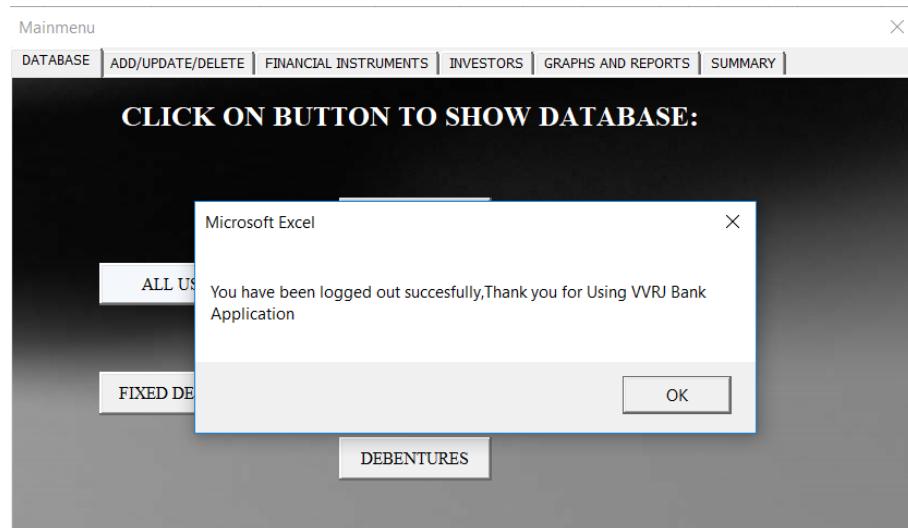
The ORANGE LINE represents the Fixed Deposits.

The GREY LINE represents Debentures.

The YELLOW LINE represents Shares.

SIGN OUT:

When signed out, the following popup is displayed:



QUERIES:

The following set of queries provides the necessary information for the annual financial analysis of the institution:

QUERY 1:

```
mysql> select sum(dividends) from shares where date > '12/31/16';
+-----+
| sum(dividends) |
+-----+
|      540369 |
+-----+
1 row in set (0.02 sec)
```

The above query presents the total amount of money paid in dividends during the current year.

QUERY 2:

```
mysql> select sum(amount_earned) from fixed_deposit;
+-----+
| sum(amount_earned) |
+-----+
|      484577 |
+-----+
1 row in set (0.03 sec)
```

```
mysql> select sum(interest_amount) from debenture;
+-----+
| sum(interest_amount) |
+-----+
|  26782910.580000002 |
+-----+
1 row in set (0.06 sec)
```

These queries provides us the total amount paid in interest from fixed accounts and debentures.

QUERY 3:

```
mysql> select sum(amount_invested) from fixed_deposit where date > '12/31/16';
+-----+
| sum(amount_invested) |
+-----+
|      5524000 |
+-----+
1 row in set (0.00 sec)
```

```
mysql> select sum(valueinvested) from shares where date > '12/31/16';
+-----+
| sum(valueinvested) |
+-----+
|      299021 |
+-----+
1 row in set (0.03 sec)
```

```

mysql> select sum(f.amount_invested) as amount_in_FDs, sum(d.amount_invested) as amount_in_debentures, sum(s.share_value_invested) as amount_in_shares from fixed_deposit f join debenture d on f.I_ID=d.I_ID join shares s on s.I_ID=d.I_ID where f.date > '2016-01-01';
+-----+-----+-----+
| amount_in_FDs | amount_in_debentures | amount_in_shares |
+-----+-----+-----+
|      224000 |          10363020 |           82006 |
+-----+-----+-----+
1 row in set (0.00 sec)

mysql>

```

The above 3 queries Report detailed information about the amount paid in interest on fixed deposits/debentures/shares during the current year.

QUERY 4:

```

mysql> select sum(amount_now) from borrowers where date > '12/31/2016' group by borrower_type;
+-----+
| sum(amount_now) |
+-----+
|      211093 |
|       66886 |
+-----+
2 rows in set (0.13 sec)

```

The above query presents the total amount collected in interest payments from the money lent to individuals and companies respectively during the current year.

QUERY 5:

```

mysql> select sum(borrowed_amount) from borrowers where date > '12/31/2016' group by borrower_type;
+-----+
| sum(borrowed_amount) |
+-----+
|      152209 |
|       53024 |
+-----+
2 rows in set (0.00 sec)

```

Presenting the total amount of money lent to individuals and companies respectively during the current year.

QUERY 6:

The following information about the investors who have invested in preferred shares during the current year: id number, name, and number of shares purchased is presented below:

```
mysql> select i.i_id, i.name, s.noofshares from investors i join shares s on i.i_id=s.i_id where s.shareid='preferred';
+-----+-----+-----+
| i_id | name | noofshares |
+-----+-----+-----+
| 52   | A.Peterson | 363 |
| 53   | D.Cook | 359 |
| 54   | T.Coleman | 136 |
| 55   | T.Montgomery | 42 |
| 56   | J.Cutler | 247 |
| 57   | C.McCaffrey | 254 |
| 58   | J.Mixon | 362 |
| 59   | S.Perine | 302 |
| 60   | L.Blount | 149 |
| 61   | T.Siemian | 148 |
| 62   | D.Martin | 337 |
| 88   | A.Cooper.PUT.LTD | 6510 |
| 89   | D.Baldwin.PUT.LTD | 6010 |
| 90   | D.Sproles.PUT.LTD | 4254 |
| 91   | S.Vereen.PUT.LTD | 1668 |
| 92   | T.Riddick.PUT.LTD | 3728 |
| 203  | Rudy Gay PUT LTD | 5651 |
| 204  | Karl-Anthony Towns PUT LTD | 6261 |
| 205  | Enes Kanter PUT LTD | 9598 |
| 206  | Julius Randle | 10 |
| 207  | Jae Crowder | 194 |
| 208  | Justise Winslow | 55 |
| 209  | Evan Fournier | 59 |
+-----+-----+-----+
23 rows in set (0.00 sec)
```

QUERY 7:

Presenting a query such that for each investor the amount of money earned from dividends in the current year.

```
mysql> select dividends from shares where date > '12/31/16' group by I_i;
+-----+
| dividends |
+-----+
| 599 |
| 2771 |
| -1041 |
| 334 |
| 687 |
| 1473 |
| 871 |
| -1657 |
| 3169 |
| 265 |
| 2862 |
| 547 |
| 2329 |
| -629 |
| 1436 |
| 838 |
| -1012 |
| 1089 |
| 13 |
| -444 |
| -56 |
| 983 |
| 425 |
| -1816 |
| 1304 |
| 62261 |
| 29546 |
| 13849 |
| 34904 |
| 71458 |
| 49534 |
| 51937 |
| 29551 |
| 10065 |
| 30114 |
| 47052 |
| 5608 |
| 44 |
| 7622 |
| 80486 |
| 1296 |
| -298 |
+-----+
42 rows in set (0.10 sec)
```

QUERY 8:

List the names and contact information of the investors who have a balance of at least \$50,000.

name	phone_number
T.Brady	4801181809
D.Brees	4809597533
M.Stafford	4803056655
M.Mariota	4803715218
A.Dalton	4800204271
B.Bortles	4803279094
D.Johnson	4807379097
C.Wentz	4806473767
E.Manning	4800770921
B.Roethlisberger	4805520440
S.Bradford	4804867339
M.Glennon	4806309786
M.Gordon	4801677149
D.Watson	4808490917
D.Murray	4802502591
J.Howard	4802128247
L.Fournette	4800017555
C.Hyde	4804303513
J.Goff	4804734827
E.Elliott	4803493669
M.Lynch	4804830738
S.Ware	4800431258
B.Powell	4808718397
C.Anderson	4808154961
M.Gillislee	4801085837
D.Cook	4801335202
T.Coleman	4805092069
T.Montgomery	4801422183
J.Cutler	4808943561
C.McCaffrey	4803871108
S.Perine	4800399308
L.Blount	4809395247
F.Gore	4804705170
R.Kelley	4802544831
T.West	4803911040
J.Stewart	4803310105
D.Henry	4804942417
J.Jones	4809162058
O.Beckham.Jr.	4807966435
D.Bryant.PUT.LTD	4803842004
A.Green.PUT.LTD	4804996928
J.Nelson.PUT.LTD	4801716348
J.Richard.PUT.LTD	4803428815
G.Bernard.PUT.LTD	4808774896
J.Charles.PUT.LTD	4807523209
M.Thomas.PUT.LTD	4807117747
A.Cooper.PUT.LTD	4806358493
T.Riddick.PUT.LTD	4807364147
T.Lockett.PUT.LTD	4809743063
R.Turbin.PUT.LTD	4809495994
Avery Bradley PUT LTD	4808598141
Deron Williams PUT LTD	4808596131
Jeff Teague PUT LTD	4808595466

Rudy Gay PUT LTD	4808594725
Karl-Anthony Towns PUT LTD	4808592891
Enes Kanter PUT LTD	4808596546
Julius Randle	4808595175
Justise Winslow	4808598405

58 rows in set (0.06 sec)

QUERY 9:

```
mysql> select f.amount_now, d.current_amount, s.amount_now from fixed_deposit f join debenture d on f.I_ID=d.I_ID join shares s on s.I_ID=d.I_ID group by f.I_ID;
+-----+-----+-----+
| amount_now | current_amount | amount_now |
+-----+-----+-----+
|    97300 |      2042814.11 |     46660 |
|   24800 |      2094971.61 |     65940 |
|   63900 |      2571618.81 |    12260 |
|   51000 |      12769190.74 |     56510 |
|  23700 |      16019888.42 |     62610 |
|  91540 |      12538307.99 |     95980 |
|  62040 |        8049.08 |      100 |
|  17830 |      11085.99 |     1940 |
|  63210 |      15031.46 |      550 |
|   4360 |       2661.72 |      590 |
+-----+-----+-----+
10 rows in set (0.00 sec)
```

A cross-tab query that presents for each investor the amount of money invested in different financial instruments (fixed deposits, debentures, and shares).

QUERY 10:

```
mysql> select sum(borrowed_amount) from borrowers where date > '12/31/2016';
+-----+
| sum(borrowed_amount) |
+-----+
|          205233 |
+-----+
1 row in set (0.00 sec)
```

A query that calculates the total amount of money lent by the institution during the current year.

CONCLUSIONS:

- Speedy Computation and Problem Solving
- Improved Quality of Decision Making
- Increased Organizational Control
- Management of Investors' and Borrowers' data
- Add, Update and Delete data
- Management of Financial Reports
- Depict the trend of Amount Invested in different Financial Instruments over the years using graphs and statistics
- Depict the amount borrowed by different borrowers over the years through graphs and statistics
- Easy Access to particular data for the employee and database administrator
- Ability to feed lessons learnt back into the decision-making process

REFERENCES:

- Developing windows based and web enabled Information Systems By Nong Ye and Teresa Wu.
- <http://www.excel-easy.com/vba/examples/inputbox-function.html>
- <https://support.microsoft.com/en-us/help/829070/how-to-use-visual-basic-for-applications-vba-to-change-userforms-in-excel>
- <http://stackoverflow.com/questions/19174007/display-a-sheet-with-vba>
- <http://www.dssbooks.com/web/ProjectsManual.html>