RAMAIAH UNIVERSITY OF APPLIED SCIENCES

ASSIGNMENT

Course Code	OMC451B
Course Name	Personal Finance
Programme	B. Tech.
Department	Computer Science & Engineering
Faculty	Faculty of Engineering & Technology

Name of the Student	Tanishq Porwar
Reg. No	18ETCS002131
Semester/Year	7th semester / 2018 batch
Course Leader/s	N. Suresh

Declaration Sheet				
Student Name	Tanishq Porwar			
Reg. No	18ETCS002131			
Programme	B. Tech.		Semester/Year	7th sem /2018 batch
Course Code	OMC451B			
Course Title	Personal Finance			
Course Date		to		
Course Leader	N. Suresh			

Declaration

The assignment submitted herewith is a result of my own investigations and that I have conformed to the guidelines against plagiarism as laid out in the Student Handbook. All sections of the text and results, which have been obtained from other sources, are fully referenced. I understand that cheating and plagiarism constitute a breach of university regulations and will be dealt with accordingly.

Signature of the Student		Date	
Submission date stamp (by Examination & Assessment Section)			

Signature of the Course Leader and date	Signature of the Reviewer and date

Contents

Assessment (CE + SEE)			
Reg.No.	18ETCS002131	Name of the Student	**Tanishq Porwar**

Component - 1:						
Sections	Marking Scheme		**Marks**			
			Max Marks			
Part-A (CO1, CO3, CO5)		Prepare Personal Budget for the period of five years from 2022-2027 with the details assuming an income increment of 5-10% for each year which should include				
	A.1	Plan for Unexpected Expenditure, Fixed Expenses and Variable Expenses	5			
	A.2	Plan for Savings and Investments for retirement	5			
	A.3	Plan for Health and Property Insurance	5			
	A.4	Conclusion of the study with stance and justification	3			
		Part-A, Max Marks		18		
Part-B (CO2)		Prepare monthly Amortisation schedule for loan assuming rate of interest for				
	B.1	Short term/Medium for 1-6 Years	5			
	B.2	Long term for 10-15 years	5			
	B.3	Conclusion of the study with stance and justification	2			
		Part-B, Max Marks		12		
Part-C (CO4)	C.1	Select two stocks of your choice listed in National stock exchange from different sector and collect previous fiveyear monthly data of share prices of selected stock and corresponding index data.	6			
	C.2	Determine Systematic and Unsystematic risks of each stock	8			
	C.3	Determine the Expected return of the stocks using CAPM Model assuming risk free return as 6%.	4			
	C.4	Conclusion of the study with stance and justification	2			
		Part-C, Max Marks		20		
		Total Component 1 (CE)		**50**		

Component - 2: Examination			
Examination	**Max Marks**	**First Examiner Marks**	**Second Examiner Marks**
SEE	**50**		
SEE marks reduced to 50 Marks			

Component-1 (CE)Total 50			Pass		Fail	
Component-2: SE Examination - 50			Pass		Fail	
Course Marks (Max 100)			Pass		Fail	
IMPORTANT: 1. Component 1 and 2 total marks have to be rounded off to the next higher integer and entered in the above fields. 2. A minimum of 40% required for a pass in both components.						
Signature of Course Leader Signature of Student						

Question No. 1

Prepare Personal Budget for the period of five years from 2022-2027 with the details assuming an income increment of 5-10% for each year which should include

Solution to Question No. 1:

To create personal budget we need to follow the following steps:

1. Set your financial goals: example: Pay off car loan.
2. Estimate your income.
3. Budget for unexpected expenses.
4. Budget for fixed expenses.
5. Budget for variable expenses.
6. Record what you spend.
7. Review your spending and saving pattern.

For this personal budget we are using income increment of 5%.

Personal Annual Budget Spreadsheet Template

	January	February	March	April	May	June	July	August	September	October	November	December	Total	Monthly Average
INCOME														
Salary	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	6,60,000	55,000
Other income sources	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	78,000	6,500
Total Income	61,500	61,500	61,500	61,500	61,500	61,500	61,500	61,500	61,500	61,500	61,500	61,500	7,38,000	61,500
Fixed Expenses														
Household Expenses														
Mortgage/Rent	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	1,20,000	10,000
Groceries	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	26,400	2,200
Automobile loan													0	0
Electricity	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	14,400	1,200
Gas	900	900	900	900	900	900	900	900	900	900	900	900	10,800	900
Internet	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	14,400	1,200
Total Household Expenses	15,500	15,500	15,500	15,500	15,500	15,500	15,500	15,500	15,500	15,500	15,500	15,500	1,86,000	15,500
Variable expences														
Food	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	48,000	4,000
Clothing	1,000		3,000	1,000		1,000		1,000					7,000	583
Utilities	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	30,000	2,500
Entertainment	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	21,600	1,800
Personal allowance	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	14,400	1,200
Total Variable expences	10,500	9,500	12,500	10,500	9,500	10,500	9,500	10,500	9,500	9,500	9,500	9,500	1,21,000	10,083
Insurance														
Health Insurance	500	500	500	500	500	500	500	500	500	500	500	500	6,000	500
Preventive Checkup	200	200	200	200	200	200	200	200	200	200	200	200	2,400	200
Total Insurance	700	700	700	700	700	700	700	700	700	700	700	700	8,400	700
Savings and Investments														
Stocks and Mutual Funds	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	60,000	5,000
Gold	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	14,400	1,200
Total Savings and Investments	6,200	6,200	6,200	6,200	6,200	6,200	6,200	6,200	6,200	6,200	6,200	6,200	74,400	6,200
Unexpected expences and savings														
Emergency Savings	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	60,000	5,000
Unexpected expenditure	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	18,000	1,500
expected expences and savings	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	78,000	6,500
Total Income	61,500	61,500	61,500	61,500	61,500	61,500	61,500	61,500	61,500	61,500	61,500	61,500	7,38,000	61,500
Total Expenditure	32,900	31,900	34,900	32,900	31,900	32,900	31,900	32,900	31,900	31,900	31,900	31,900	3,89,800	32,483
Income after expenses	28,600	29,600	26,600	28,600	29,600	28,600	29,600	28,600	29,600	29,600	29,600	29,600	3,48,200	29,017
Balance	28,600	58,200	84,800	1,13,400	1,43,000	1,71,600	2,01,200	2,29,800	2,59,400	2,89,000	3,18,600	3,48,200		

Figure 1: Monthly annual budget for year 2022

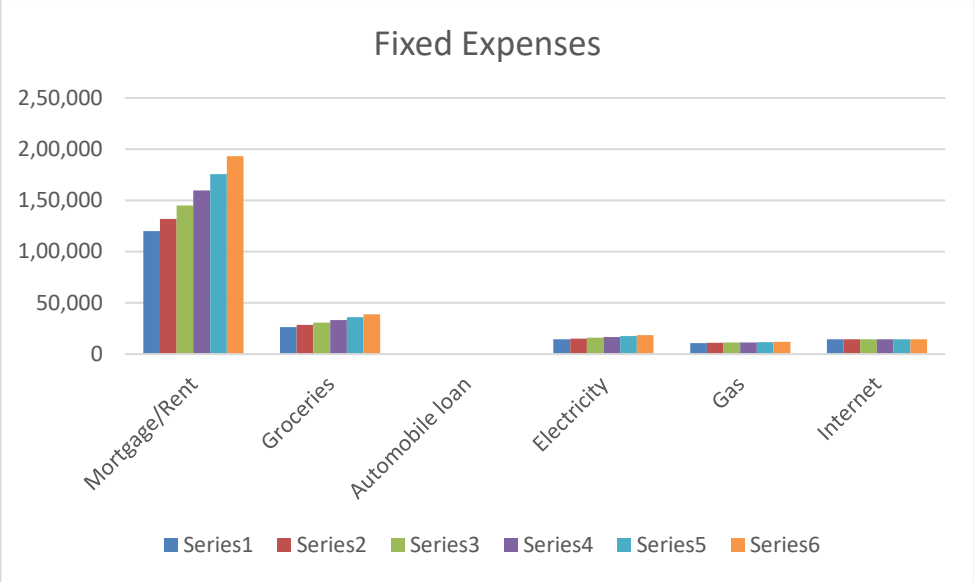
	2,022	2,023	2,024	2,025	2,026	2,027	Total	Average
INCOME								
Salary	6,60,000	₹ 6,93,000	₹ 7,27,650	₹ 7,64,033	₹ 8,02,234	₹ 8,42,346	₹ 44,89,262	₹ 7,48,210
OTHER INCOME SOURCE	₹ 78,000	₹ 81,900	₹ 85,995	₹ 90,295	₹ 94,809	₹ 99,550	₹ 5,30,549	₹ 88,425
Total	₹ 7,38,000	₹ 7,74,900	₹ 8,13,645	₹ 8,54,327	₹ 8,97,044	₹ 9,41,896	₹ 50,19,812	₹ 8,36,635
Fixed Expenses								
Household Expenses								
Mortgage/Rent	1,20,000	₹ 1,32,000	₹ 1,45,200	₹ 1,59,720	₹ 1,75,692	₹ 1,93,261	₹ 9,25,873	₹ 1,54,312
Groceries	26,400	₹ 28,512	₹ 30,793	₹ 33,256	₹ 35,917	₹ 38,790	₹ 1,93,669	₹ 32,278
Automobile loan	0	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0
Electricity	14,400	₹ 15,120	₹ 15,876	₹ 16,670	₹ 17,503	₹ 18,378	₹ 97,948	₹ 16,325
Gas	10,800	₹ 11,016	₹ 11,236	₹ 11,461	₹ 11,690	₹ 11,924	₹ 68,128	₹ 11,355
Internet	14,400	₹ 14,400	₹ 14,400	₹ 14,400	₹ 14,400	₹ 14,400	₹ 86,400	₹ 14,400
Total	₹ 1,86,000	₹ 2,01,048	₹ 2,17,505	₹ 2,35,507	₹ 2,55,202	₹ 2,76,754	₹ 13,72,017	₹ 2,28,669
Variable expences								
Food	48,000	₹ 35,000	₹ 35,000	₹ 35,000	₹ 35,000	₹ 35,000	₹ 2,23,000	₹ 37,167
Clothing	7,000	₹ 7,560	₹ 8,165	₹ 8,818	₹ 9,523	₹ 10,285	₹ 51,352	₹ 8,559
Utilities	30,000	₹ 5,000	₹ 0	₹ 0	₹ 7,000	₹ 0	₹ 42,000	₹ 7,000
Entertainment	21,600	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0	₹ 21,600	₹ 3,600
Personal allowance	14,400	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0	₹ 14,400	₹ 2,400
Total	₹ 1,21,000	₹ 47,560	₹ 43,165	₹ 43,818	₹ 51,523	₹ 45,285	₹ 3,52,352	₹ 58,725
Health Insurance								
Health Insurance	6,000	₹ 3,600	₹ 3,600	₹ 3,600	₹ 3,600	₹ 3,600	₹ 24,000	₹ 4,000
Preventive Checkup	2,400	₹ 2,640	₹ 2,904	₹ 3,194	₹ 3,514	₹ 3,865	₹ 18,517	₹ 3,086
Total	₹ 8,400	₹ 6,240	₹ 6,504	₹ 6,794	₹ 7,114	₹ 7,465	₹ 42,517	₹ 7,086
Savings and Investments								
Stocks and Mutual Funds	₹ 60,000	₹ 2,000	₹ 2,000	₹ 2,000	₹ 2,000	₹ 2,000	₹ 70,000	₹ 11,667
Gold	₹ 14,400	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0
Total	₹ 74,400	₹ 2,000	₹ 2,000	₹ 2,000	₹ 2,000	₹ 2,000	₹ 70,000	₹ 11,667
Unexpected expences and savings								
Emergency Savings	60,000	₹ 63,600	₹ 67,416	₹ 71,461	₹ 75,749	₹ 80,294	₹ 3,38,226	₹ 56,371
Unexpected expenditure	18,000	₹ 10,000	₹ 30,000	₹ 10,000	₹ 40,000	₹ 45,000	₹ 1,53,000	₹ 25,500
Total	₹ 78,000	₹ 73,600	₹ 97,416	₹ 81,461	₹ 1,15,749	₹ 1,25,294	₹ 4,91,226	₹ 81,871
Savings (Income-Expens	**₹ 4,26,200**	**₹ 5,91,652**	**₹ 6,41,887**	**₹ 6,47,669**	**₹ 6,96,953**	**₹ 7,35,685**	**₹ 36,74,151**	**₹ 6,12,359**

Figure 2: Projection of 2022 budget to 5 years

A.1 Plan for Unexpected Expenditure, Fixed Expenses and Variable Expenses

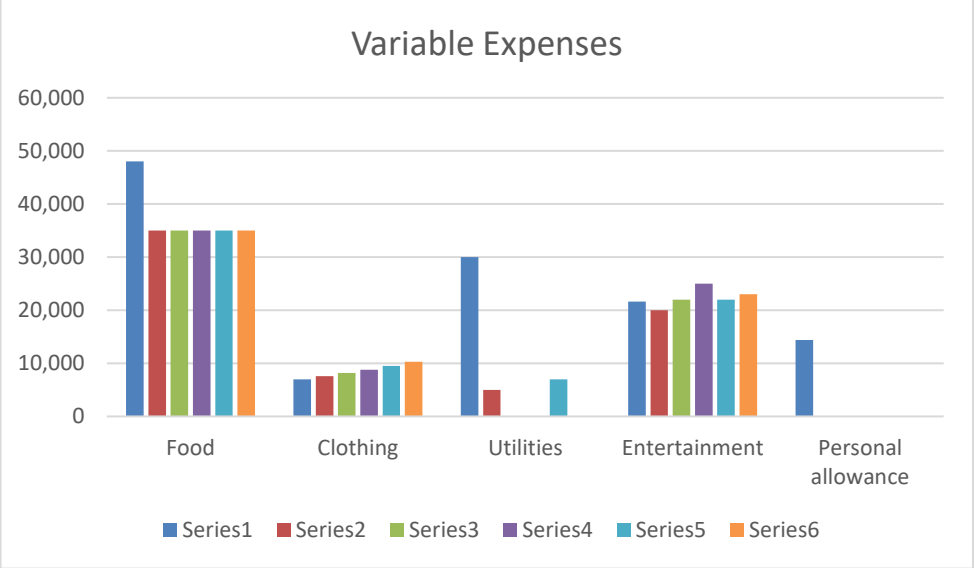
Plan for Fixed expenses:

These are the expenses you have that don't change month-to-month. Your mortgage or rent, car payment, and insurance are examples of fixed expenses. They may vary slightly from year-to-year (say, a rent increase) but overall, you can count on them to stay the same for at least a year at a time. That's why we have shown



Plan for Variable expenses:

Just as the name says, these are your expenses that will vary month-to-month and are probably the largest spending category. Variable expenses include such things as groceries, Food, utilities, entertainment expenses, and clothing. By keeping track of these expenses over time, you can get a better idea of how much you're spending each month and plan accordingly. Utilities can become a fixed expense if your service provider offers an "equalizer" plan. These plans average your usage over time and charge the same each month, rather than spiking during times of increased usage (think summer AC bills in hot climates).



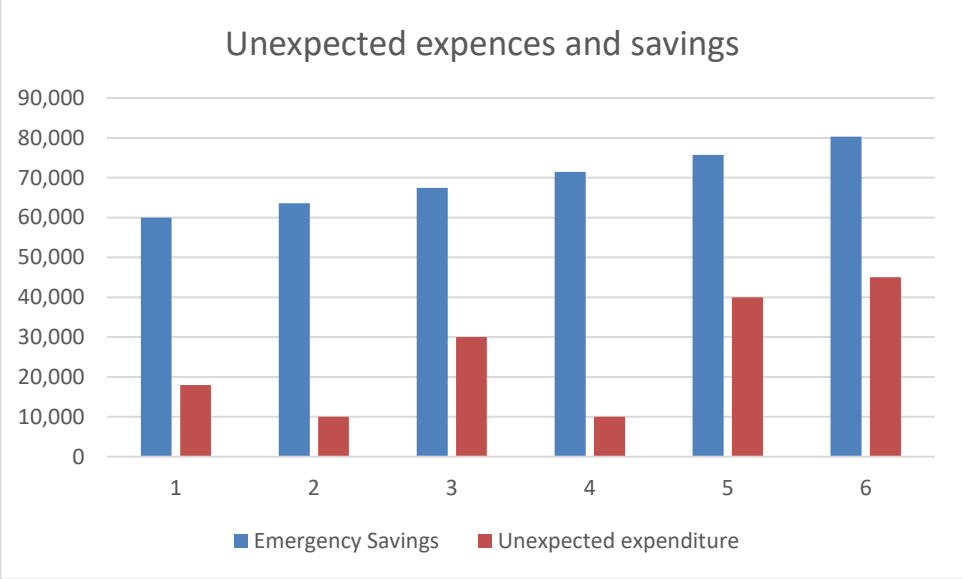
Unexpected expenses:

Your emergency fund should be used for expenses that fall outside the categories of annual bills, irregular maintenance, or predictable health costs. Truly unexpected expenses could be:

- Living expenses for several months after you lose your job
- Unusual medical bills that health insurance doesn't cover
- Plane tickets to attend an unexpected funeral

These expenses are not only irregular and unforeseen; they are related to unexpected or once-in-a-lifetime events, rather than more common activities.

Plan for Unexpected expenses:



When you plan your budget to include annual bills and irregular maintenance, you are able to save the money in your emergency fund for truly unexpected expenses.
At a minimum, you should have an emergency fund that can cover three to six months of:

- Rent or mortgage payments
- Utilities
- Emergency savings
- College savings
- Prescriptions

However, just because you have this amount set aside doesn't mean you should stop saving. If your monthly budget is set up to continue adding a small amount per month into your emergency savings, you will be able to plan and pay for unexpected expenses that come your way without falling into debt or missing important bills.

A.2 Plan for Savings and Investments for retirement

Several retirement plans help in accumulating a considerable sum for your retired life. Some of them are listed below:

National Pension System

National Pension System (NPS) is a government scheme which intends to provide social security to the working class. Employees working in the public, government, and private sectors can invest in this scheme. Moreover, even those employed in the unorganised sector can also invest in NPS. Under this scheme, the employees will invest in a pension account at regular intervals.

Public Provident Fund

Public Provident Fund (PPF) is a government savings scheme covered under Section 80C of the Income Tax Act, 1961. You can save up to Rs 46,800 a year in taxes by investing in PPF. You can invest up to Rs 1,50,000 a year, and these accounts come with a lock-in period of 15 years. Investing in PPF is an excellent way of planning your retirement as it offers an attractive rate of return.

Mutual Funds

Mutual funds are one of the best private schemes to plan your retirement. These are capable of offering returns in the range of 12% to 15% a year. Also, when you invest with a long-term horizon, you will unleash the power of compounding. Since retirement planning is done with a long-term horizon, you can initially invest aggressively in equity funds and then switch your investments to debt funds as you near your retirement. Doing this will ensure that you have accumulated a considerable sum on which you can fall back in your retired life.

A.3 Plan for Health and Property Insurance

Health insurance provides financial protection in case you have a serious accident or illness. For example, a broken leg can cost up to $7,500. Health coverage can help protect you from high, unexpected costs.

With Marketplace coverage, you'll get access to preventive services — like shots and screening tests — at no cost to you. Getting recommended preventive services is a key step to good health and well-being.

When you apply for insurance using the Health Insurance Marketplace, you'll find out if you qualify for savings that can make insurance less expensive. Before you apply, select your household size, state, and income range to see if you may qualify for financial help

A.4 Conclusion of the study with stance and justification

Importance of building budget:

A budget is a plan for using money to meet wants and needs. Having a budget is necessary for successful financial planning. By using a budget, you will learn how to live within your income and how to spend your money wisely. You will also develop good money management skills that will help you reach your financial goals.

Question No. 2

Prepare monthly Amortization schedule for loan assuming rate of interest for

Solution to Question No. 2:

Short-term and long-term loans may refer to the time period in which a loan is paid back. Short term loans are generally to be repaid within a few months or a year or so. Long-term loan repayments can last for a few years up to several years (such as 10-15) years.

Short-term loans are generally associated with a need for quick money in small amounts. Examples of these are cash advance loans and loans derived from peer-to-peer lending. Long-term loans are generally required for larger amounts or for dealing with bigger transactions such as a home purchase loan.

Some loans can either be short term loans or long terms loans, or somewhere in-between. An example of this is with car loans, which can either be for larger amounts or smaller amounts depending on the arrangement.

B.1 Short term/Medium for 1-6 Years

Let us consider short term loan for purchasing a laptop the loan amount that we need is 75,000 rupees with interest rate of 10%. The loan period taken in consideration is 1 years.

Details of loan are shown below:

Prinipal:	₹ 75,000.00	**Number of Payments:**	12
Term:	1	**Monthly Rate:**	0.008333333
Annual Rate:	10%	**Mortgage Payment:**	₹ 6,593.69
Initial Date:	7-1-2021		

Details of payment are shown below:

Months:	Date:	Beginning Balance:	Payment:	Intrest:	Principal:	Ending Balance:
1	7-1-2021	₹ 75,000.00	₹ 6,593.69	₹ 625.00	₹ 5,968.69	₹ 69,031.31
2	8-1-2021	₹ 69,031.31	₹ 6,593.69	₹ 575.26	₹ 6,018.43	₹ 63,012.88
3	9-1-2021	₹ 63,012.88	₹ 6,593.69	₹ 525.11	₹ 6,068.58	₹ 56,944.29
4	10-1-2021	₹ 56,944.29	₹ 6,593.69	₹ 474.54	₹ 6,119.16	₹ 50,825.14
5	11-1-2021	₹ 50,825.14	₹ 6,593.69	₹ 423.54	₹ 6,170.15	₹ 44,654.99
6	12-1-2021	₹ 44,654.99	₹ 6,593.69	₹ 372.12	₹ 6,221.57	₹ 38,433.42
7	1-1-2022	₹ 38,433.42	₹ 6,593.69	₹ 320.28	₹ 6,273.41	₹ 32,160.01
8	2-1-2022	₹ 32,160.01	₹ 6,593.69	₹ 268.00	₹ 6,325.69	₹ 25,834.32
9	3-1-2022	₹ 25,834.32	₹ 6,593.69	₹ 215.29	₹ 6,378.41	₹ 19,455.91
10	4-1-2022	₹ 19,455.91	₹ 6,593.69	₹ 162.13	₹ 6,431.56	₹ 13,024.35
11	5-1-2022	₹ 13,024.35	₹ 6,593.69	₹ 108.54	₹ 6,485.16	₹ 6,539.20
12	6-1-2022	₹ 6,539.20	₹ 6,593.69	₹ 54.49	₹ 6,539.20	₹ 0.00
		Total	₹ 79,124.30	₹ 4,124.30	₹ 75,000.00	

Loan summary:

MONTHLY PAYMENT	6593.691542
TOTAL NUMBER OF PAYMENTS	12
TOTAL INTREST	4124.298507
TOTAL COST	79124.29851

B.2 Long term for 10-15 years

For long term loan we are considering long term loan to purchase my house.
To buy a house we are taking loan of 15 lakhs with interest rate of 8%.

The loan details are given below:

Prinipal:	₹ 15,00,000.00	**Number of Payments:**	96
Term:	8	**Monthly Rate:**	0.006666667
Annual Rate:	8%	**Mortgage Payment:**	₹ 21,205.02
Initial Date:	7-1-2021		

Payment details are shown below:

Months:	Date:	Beginning Balance:	Payment:	Intrest:	Principal:	Ending Balance:
1	7-1-2021	₹ 15,00,000.00	₹ 21,205.02	₹ 10,000.00	₹ 11,205.02	₹ 14,88,794.98
2	8-1-2021	₹ 14,88,794.98	₹ 21,205.02	₹ 9,925.30	₹ 11,279.72	₹ 14,77,515.26
3	9-1-2021	₹ 14,77,515.26	₹ 21,205.02	₹ 9,850.10	₹ 11,354.92	₹ 14,66,160.34
4	10-1-2021	₹ 14,66,160.34	₹ 21,205.02	₹ 9,774.40	₹ 11,430.62	₹ 14,54,729.73
5	11-1-2021	₹ 14,54,729.73	₹ 21,205.02	₹ 9,698.20	₹ 11,506.82	₹ 14,43,222.91
6	12-1-2021	₹ 14,43,222.91	₹ 21,205.02	₹ 9,621.49	₹ 11,583.53	₹ 14,31,639.37
7	1-1-2022	₹ 14,31,639.37	₹ 21,205.02	₹ 9,544.26	₹ 11,660.76	₹ 14,19,978.62
8	2-1-2022	₹ 14,19,978.62	₹ 21,205.02	₹ 9,466.52	₹ 11,738.49	₹ 14,08,240.12
9	3-1-2022	₹ 14,08,240.12	₹ 21,205.02	₹ 9,388.27	₹ 11,816.75	₹ 13,96,423.37
10	4-1-2022	₹ 13,96,423.37	₹ 21,205.02	₹ 9,309.49	₹ 11,895.53	₹ 13,84,527.84
11	5-1-2022	₹ 13,84,527.84	₹ 21,205.02	₹ 9,230.19	₹ 11,974.83	₹ 13,72,553.01
12	6-1-2022	₹ 13,72,553.01	₹ 21,205.02	₹ 9,150.35	₹ 12,054.67	₹ 13,60,498.34
13	7-1-2022	₹ 13,60,498.34	₹ 21,205.02	₹ 9,069.99	₹ 12,135.03	₹ 13,48,363.31
14	8-1-2022	₹ 13,48,363.31	₹ 21,205.02	₹ 8,989.09	₹ 12,215.93	₹ 13,36,147.38
15	9-1-2022	₹ 13,36,147.38	₹ 21,205.02	₹ 8,907.65	₹ 12,297.37	₹ 13,23,850.01
16	10-1-2022	₹ 13,23,850.01	₹ 21,205.02	₹ 8,825.67	₹ 12,379.35	₹ 13,11,470.66
17	11-1-2022	₹ 13,11,470.66	₹ 21,205.02	₹ 8,743.14	₹ 12,461.88	₹ 12,99,008.78
18	12-1-2022	₹ 12,99,008.78	₹ 21,205.02	₹ 8,660.06	₹ 12,544.96	₹ 12,86,463.82
19	1-1-2023	₹ 12,86,463.82	₹ 21,205.02	₹ 8,576.43	₹ 12,628.59	₹ 12,73,835.23
20	2-1-2023	₹ 12,73,835.23	₹ 21,205.02	₹ 8,492.23	₹ 12,712.78	₹ 12,61,122.44
21	3-1-2023	₹ 12,61,122.44	₹ 21,205.02	₹ 8,407.48	₹ 12,797.54	₹ 12,48,324.91
22	4-1-2023	₹ 12,48,324.91	₹ 21,205.02	₹ 8,322.17	₹ 12,882.85	₹ 12,35,442.05
23	5-1-2023	₹ 12,35,442.05	₹ 21,205.02	₹ 8,236.28	₹ 12,968.74	₹ 12,22,473.32
24	6-1-2023	₹ 12,22,473.32	₹ 21,205.02	₹ 8,149.82	₹ 13,055.20	₹ 12,09,418.12
25	7-1-2023	₹ 12,09,418.12	₹ 21,205.02	₹ 8,062.79	₹ 13,142.23	₹ 11,96,275.89
26	8-1-2023	₹ 11,96,275.89	₹ 21,205.02	₹ 7,975.17	₹ 13,229.85	₹ 11,83,046.04
27	9-1-2023	₹ 11,83,046.04	₹ 21,205.02	₹ 7,886.97	₹ 13,318.05	₹ 11,69,728.00
			.....			
			.....			
81	3-1-2028	₹ 3,20,799.74	₹ 21,205.02	₹ 2,138.66	₹ 19,066.35	₹ 3,01,733.38
82	4-1-2028	₹ 3,01,733.38	₹ 21,205.02	₹ 2,011.56	₹ 19,193.46	₹ 2,82,539.92
83	5-1-2028	₹ 2,82,539.92	₹ 21,205.02	₹ 1,883.60	₹ 19,321.42	₹ 2,63,218.50
84	6-1-2028	₹ 2,63,218.50	₹ 21,205.02	₹ 1,754.79	₹ 19,450.23	₹ 2,43,768.27
85	7-1-2028	₹ 2,43,768.27	₹ 21,205.02	₹ 1,625.12	₹ 19,579.90	₹ 2,24,188.37
86	8-1-2028	₹ 2,24,188.37	₹ 21,205.02	₹ 1,494.59	₹ 19,710.43	₹ 2,04,477.94
87	9-1-2028	₹ 2,04,477.94	₹ 21,205.02	₹ 1,363.19	₹ 19,841.83	₹ 1,84,636.11
88	10-1-2028	₹ 1,84,636.11	₹ 21,205.02	₹ 1,230.91	₹ 19,974.11	₹ 1,64,662.00
89	11-1-2028	₹ 1,64,662.00	₹ 21,205.02	₹ 1,097.75	₹ 20,107.27	₹ 1,44,554.73
90	12-1-2028	₹ 1,44,554.73	₹ 21,205.02	₹ 963.70	₹ 20,241.32	₹ 1,24,313.41
91	1-1-2029	₹ 1,24,313.41	₹ 21,205.02	₹ 828.76	₹ 20,376.26	₹ 1,03,937.14
92	2-1-2029	₹ 1,03,937.14	₹ 21,205.02	₹ 692.91	₹ 20,512.10	₹ 83,425.04
93	3-1-2029	₹ 83,425.04	₹ 21,205.02	₹ 556.17	₹ 20,648.85	₹ 62,776.19
94	4-1-2029	₹ 62,776.19	₹ 21,205.02	₹ 418.51	₹ 20,786.51	₹ 41,989.68
95	5-1-2029	₹ 41,989.68	₹ 21,205.02	₹ 279.93	₹ 20,925.09	₹ 21,064.59
96	6-1-2029	₹ 21,064.59	₹ 21,205.02	₹ 140.43	₹ 21,064.59	₹ 0.00
		TOTAL	**₹ 20,35,681.81**	**##########**	**₹ 15,00,000.00**	

Loan summary:

MONTHLY PAYMENT	₹ 21,205.02
TOTAL NUMBER OF PAYMENTS	96
TOTAL INTREST	₹ 5,35,681.81
TOTAL COST	###########

B.3 Conclusion of the study with stance and justification

As mentioned, one of the main differences between short term and long-term loans is the amount issued. A general rule of thumb is that the higher the loan amount, the longer it will take to repay it (though there may be some exceptions).

Another difference is that it may be easier to obtain loan approval for short-term loans. Short-term lenders might not require as stringent background credit checks as long-term lenders. For instance, a mortgage loan might be associated with a very thorough and sometimes demanding risk analysis process before the loan gets approved. In comparison, some short-term loans can almost be obtained on-the-spot.

Lastly, short-term loans tend to have higher, less flexible interest rate options. This is to compensate for the fact that the repayment period will be shorter, and to help prevent borrower default

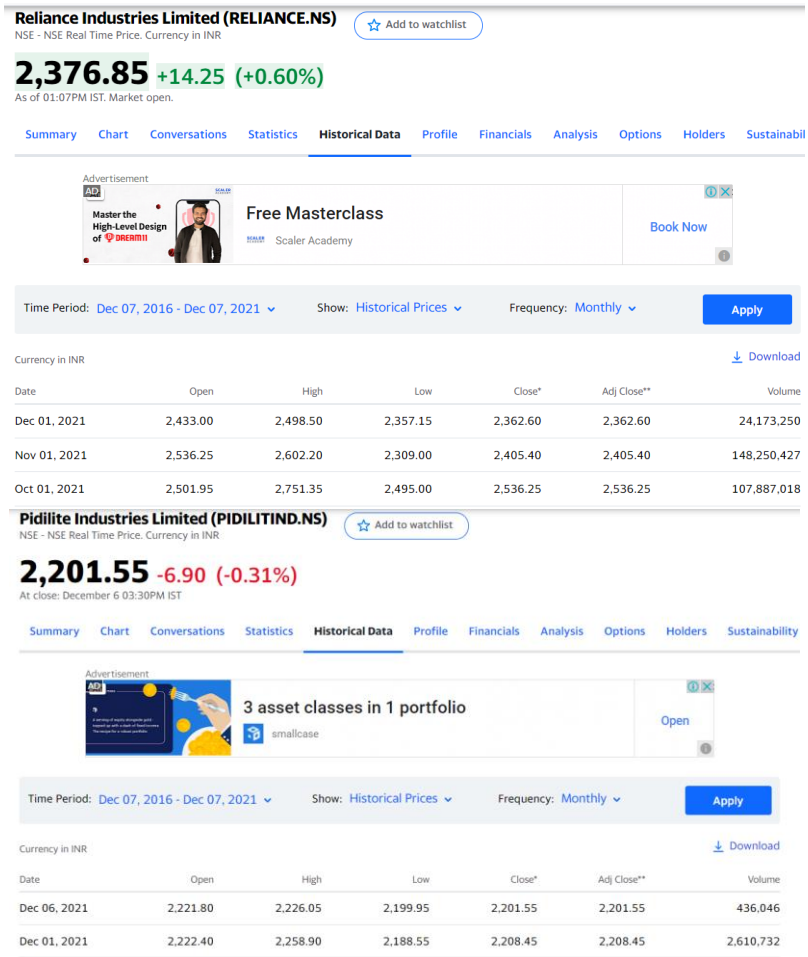
Question No. 3

Prepare Personal Budget for the period of five years from 2022-2027 with the details assuming an income increment of 5-10% for each year which should include

Solution to Question No. 3:

C.1 Select two stocks of your choice listed in National stock exchange from different sector and collect previous five-year monthly data of share prices of selected stock and corresponding index data.

The two chosen stocks are



Reliance Industries Limited (RELIANCE.NS)
NSE - NSE Real Time Price. Currency in INR
Add to watchlist

2,376.85 +14.25 (+0.60%)
As of 01:07PM IST. Market open.

Summary | Chart | Conversations | Statistics | **Historical Data** | Profile | Financials | Analysis | Options | Holders | Sustainabil

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Time Period: Dec 07, 2016 - Dec 07, 2021 Show: Historical Prices Frequency: Monthly Apply

Currency in INR — Download

Date	Open	High	Low	Close*	Adj Close**	Volume
Dec 01, 2021	2,433.00	2,498.50	2,357.15	2,362.60	2,362.60	24,173,250
Nov 01, 2021	2,536.25	2,602.20	2,309.00	2,405.40	2,405.40	148,250,427
Oct 01, 2021	2,501.95	2,751.35	2,495.00	2,536.25	2,536.25	107,887,018

Pidilite Industries Limited (PIDILITIND.NS)
NSE - NSE Real Time Price. Currency in INR
Add to watchlist

2,201.55 -6.90 (-0.31%)
At close: December 6 03:30PM IST

Summary | Chart | Conversations | Statistics | **Historical Data** | Profile | Financials | Analysis | Options | Holders | Sustainability

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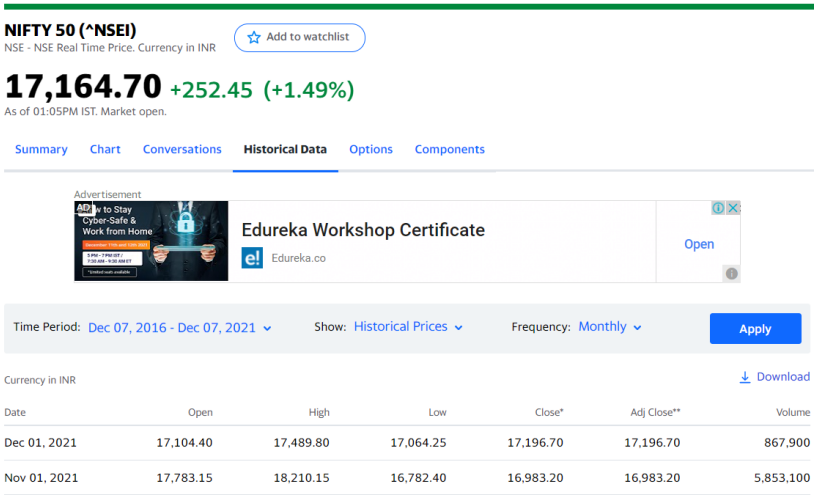
3 asset classes in 1 portfolio
smallcase
Open

Time Period: Dec 07, 2016 - Dec 07, 2021 Show: Historical Prices Frequency: Monthly Apply

Currency in INR — Download

Date	Open	High	Low	Close*	Adj Close**	Volume
Dec 06, 2021	2,221.80	2,226.05	2,199.95	2,201.55	2,201.55	436,046
Dec 01, 2021	2,222.40	2,258.90	2,188.55	2,208.45	2,208.45	2,610,732

The chosen index is nifty 50



NIFTY 50 (^NSEI)
NSE - NSE Real Time Price. Currency in INR
Add to watchlist

17,164.70 +252.45 (+1.49%)
As of 01:05PM IST. Market open.

Summary | Chart | Conversations | **Historical Data** | Options | Components

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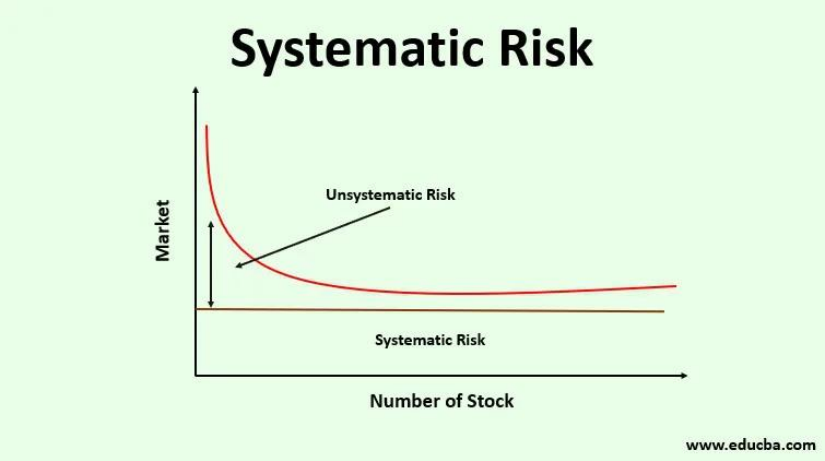
Time Period: Dec 07, 2016 - Dec 07, 2021 Show: Historical Prices Frequency: Monthly Apply

Currency in INR — Download

Date	Open	High	Low	Close*	Adj Close**	Volume
Dec 01, 2021	17,104.40	17,489.80	17,064.25	17,196.70	17,196.70	867,900
Nov 01, 2021	17,783.15	18,210.15	16,782.40	16,983.20	16,983.20	5,853,100

C.2 Determine Systematic and Unsystematic risks of each stock

Systematic risk refers to the risk inherent to the entire market or market segment. Systematic risk, also known as “undiversifiable risk,” “volatility” or “market risk,” affects the overall market, not just a particular stock or industry. Systematic risk is both unpredictable and impossible to completely avoid. It cannot be mitigated through diversification, only through hedging or by using the correct asset allocation strategy.



The opposite of systematic risk is unsystematic risk which affects a very specific group of securities or an individual security. Unsystematic risk can be mitigated through diversification. While systematic risk can be thought of as the probability of a loss that is associated with the entire market or a segment thereof, unsystematic risk refers to the probability of a loss within a specific industry or security.

If you want to know how much systematic risk a particular security, fund or portfolio has, you can look at its beta, which measures how volatile that investment is compared to the overall market. A beta of greater than one means the investment has more systematic risk than the market, while less than one means less systematic risk than the market. A beta equal to one means the investment carries the same systematic risk as the market.

	A	B	C	D	E	F	G
1	Date	Nifty 50	% change nifty	RELIANCE	% change RELIANCE	PIDILITIND	% change PIDILITIND
2	01-01-2017	8561.299805		504.438507		653.826843	
3	01-02-2017	8879.599609	3.72%	597.512451	18.45%	662.224243	1.28%
4	01-03-2017	9173.75	3.31%	637.497864	6.69%	678.7276	2.49%
5	01-04-2017	9304.049805	1.42%	673.356873	5.62%	698.774353	2.95%
6	01-05-2017	9621.25	3.41%	647.053894	-3.91%	747.653687	7.00%
7	01-06-2017	9520.900391	-1.04%	666.020996	2.93%	782.068176	4.60%
8	01-07-2017	10077.09961	5.84%	779.53418	17.04%	772.602966	-1.21%
9	01-08-2017	9917.900391	-1.58%	775.186829	-0.56%	811.483154	5.03%
10	01-09-2017	9788.599609	-1.30%	759.289307	-2.05%	775.789368	-4.40%
11	01-10-2017	10335.29981	5.59%	914.812744	20.48%	763.388489	-1.60%
12	01-11-2017	10226.54981	-1.05%	896.046936	-2.05%	822.366028	7.73%
13	01-12-2017	10530.7002	2.97%	895.56073	-0.05%	880.953003	7.12%
14	01-01-2018	11027.7002	4.72%	934.696838	4.37%	875.191895	-0.65%
15	01-02-2018	10492.84961	-4.85%	928.133606	-0.70%	879.732422	0.52%
16	01-03-2018	10113.7002	-3.61%	858.271973	-7.53%	896.185608	1.87%
17	01-04-2018	10739.34961	6.19%	936.641479	9.13%	1060.619751	18.35%
18	01-05-2018	10736.15039	-0.03%	895.852478	-4.35%	1130.338257	6.57%
19	01-06-2018	10714.29981	-0.20%	945.538208	5.55%	1038.454224	-8.13%
20	01-07-2018	11356.5	5.99%	1160.289917	22.71%	1096.99231	5.64%
21	01-08-2018	11680.5	2.85%	1214.733521	4.69%	1141.128052	4.02%
22	01-09-2018	10930.4502	-6.42%	1230.680176	1.31%	1032.017822	-9.56%
23	01-10-2018	10386.59961	-4.98%	1038.244263	-15.64%	946.168579	-8.32%
24	01-11-2018	10876.75	4.72%	1142.239746	10.02%	1147.914673	21.32%
25	01-12-2018	10862.54981	-0.13%	1096.943481	-3.97%	1093.197998	-4.77%
26	01-01-2019	10830.9502	-0.29%	1200.547852	9.44%	1104.94043	1.07%
27	01-02-2019	10792.5	-0.36%	1204.363281	0.32%	1137.20813	2.92%

.....

.....

55	01-06-2021	15721.5	0.89%	2103.881836	-2.30%	2146.062744	3.03%
56	01-07-2021	15763.04981	0.26%	2035.300049	-3.26%	2270.455566	5.80%
57	01-08-2021	17132.19922	8.69%	2258.149902	10.95%	2280.350098	0.44%
58	01-09-2021	17618.15039	2.84%	2519.25	11.56%	2381.949951	4.46%
59	01-10-2021	17671.65039	0.30%	2536.25	0.67%	2313.649902	-2.87%
60	01-11-2021	16983.19922	-3.90%	2405.399902	-5.16%	2205.850098	-4.66%
61	01-12-2021	17196.69922	1.26%	2408.25	0.12%	2208.449951	0.12%

		monthly Nifty	annual Nifty	monthly RELIANCE	annual RELIANCE	monthly PIDILITIND	annual PIDILITIND
63							
64	mean	1.34%	16.08%	3.09%	37.11%	2.30%	27.57%
65	variance	0.293%	3.52%	0.879%	10.55%	0.449%	5.39%

67	Beta RELIANCE	1.180824644
68	beta PIDILITIND	0.544304373

Figure: stock data for 5 years, average and variance of % change

RELIANCE SUMMARY OUTPUT

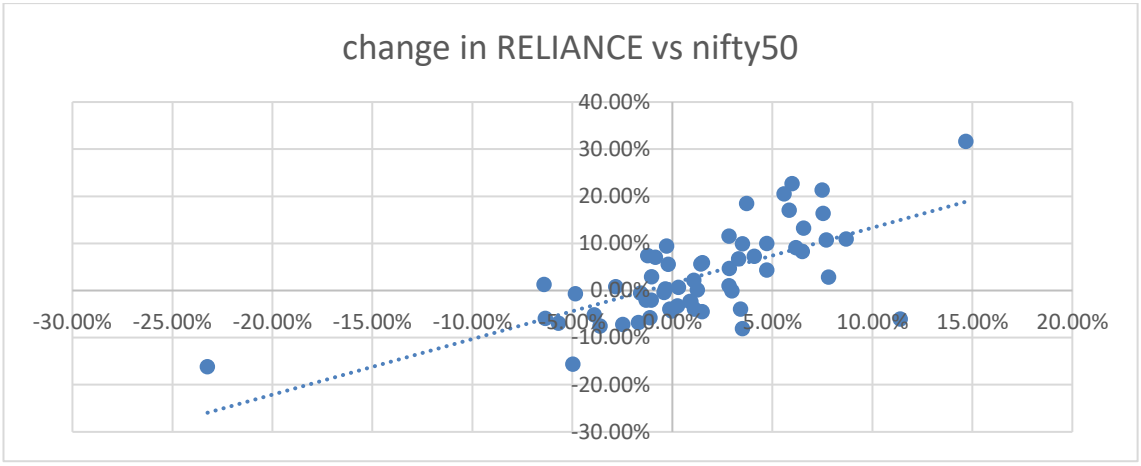
Regression Statistics	
Multiple R	0.681741
R Square	0.464771
Adjusted R	0.455381
Standard E	0.069182
Observatic	59

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regressior	1	0.236896	0.236896	49.49639	2.78E-09
Residual	57	0.272809	0.004786		
Total	58	0.509705			

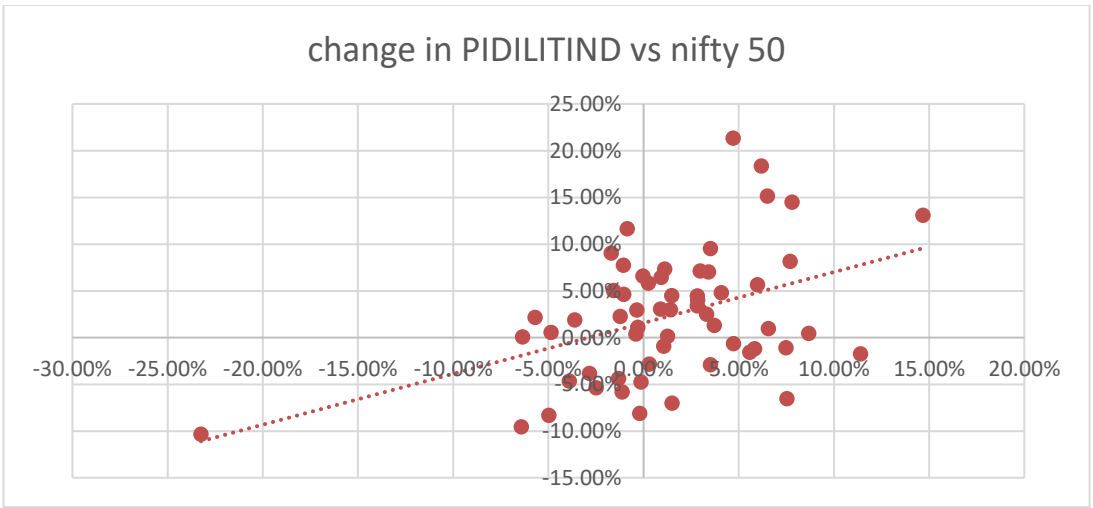
	Coefficients	*andard Err*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
Intercept	0.015109	0.009283	1.627545	0.109137	-0.00348	0.033698	-0.00348	0.033698
X Variable	1.180825	0.167841	7.035367	2.78E-09	0.844728	1.516921	0.844728	1.516921

Figure 3: Regression data of reliance industries



	A	B	C	D	E	F	G	H	I
	PIDILITIND SUMMARY OUTPUT								
	Regression Statistics								
	Multiple R	0.439425							
	R Square	0.193094							
	Adjusted R	0.178938							
	Standard E	0.060747							
	Observatic	59							
	ANOVA								
		df	*SS*	*MS*	*F*	*ignificance F*			
	Regressior	1	0.050335	0.050335	13.6402	0.000498			
	Residual	57	0.210341	0.00369					
	Total	58	0.260676						
		Coefficients	*tandard Err*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
	Intercept	0.01568	0.008151	1.923584	0.059406	-0.00064	0.032002	-0.00064	0.032002
	X Variable	0.544304	0.147378	3.693264	0.000498	0.249186	0.839423	0.249186	0.839423

Figure 4: Regression data of PIDILITE india



Beta RELIANCE	1.180824644
beta PIDILITIND	0.544304373

TOTAL RISK = UNSYSTEMATIC RISK + SYSTEMATIC RISK
*SYSTEMATIC RISK = BETA^2 * VARIANCE OF MARKET*

RELIANCE sys risk =	4.90%
RELIANCE unsys risk =	5.64%
PIDILITIND sys risk =	1.04%
PIDILITIND unsys risk =	4.35%

C.3 Determine the Expected return of the stocks using CAPM Model assuming risk free return as 6%.

The Capital Asset Pricing Model (CAPM) describes the relationship between systematic risk and expected return for assets, particularly stocks. CAPM is widely used throughout finance for pricing risky securities and generating expected returns for assets given the risk of those assets and cost of capital.

$$ER_i = R_f + \beta_i(ER_m - R_f)$$

where:

$ER_i = \text{expected return of investment}$

$R_f = \text{risk-free rate}$

$\beta_i = \text{beta of the investment}$

$(ER_m - R_f) = \text{market risk premium}$

Beta RELIANCE	1.180824644
beta PIDILITIND	0.544304373

TOTAL RISK = UNSYSTEMATIC RISK + SYSTEMATIC RISK
*SYSTEMATIC RISK = BETA^2 * VARIANCE OF MARKET*

risk free rate (rf)= 6%
RA = RF + (RM-RF)BETA

RELIANCE sys risk =	4.90%
RELIANCE unsys risk =	5.64%
PIDILITIND sys risk =	1.04%
PIDILITIND unsys risk =	4.35%

EXPECTED RETURN RELIANCE	18.982%
EXPECTED RETURN PIDILITIND	8.750%

Investors expect to be compensated for risk and the time value of money. The risk-free rate in the CAPM formula accounts for the time value of money. The other components of the CAPM formula account for the investor taking on additional risk.

The beta of a potential investment is a measure of how much risk the investment will add to a portfolio that looks like the market. If a stock is riskier than the market, it will have a beta greater than one. If a stock has a beta of less than one, the formula assumes it will reduce the risk of a portfolio.

A stock's beta is then multiplied by the market risk premium, which is the return expected from the market above the risk-free rate. The risk-free rate is then added to the product of the stock's

beta and the market risk premium. The result should give an investor the required return or discount rate they can use to find the value of an asset.

The goal of the CAPM formula is to evaluate whether a stock is fairly valued when its risk and the time value of money are compared to its expected return.

C.4 Conclusion of the study with stance and justification

The degree of impact of the systematic risk on the return of the stock with respect to the market returns can be assessed by the magnitude of beta:

- When the $\beta = 1$ the systematic risk affects the stock returns as much as it affects the market
- When the $\beta = 0$ the systematic risk does not affect the stock returns but affects the market
- When the $\beta < 1$ the systematic risk affects the stock returns but less than how much it affects the market
- When the $\beta > 1$ the systematic risk affects the stock returns but more than how much it affects the market

The solution to systematic risk is in asset allocation. If one market is impacted by a certain systematic risk, some parts of the portfolio should be invested in another market. Now the definition of the market is dynamic, but here we can define it as different asset classes.

Reliance has a beta>1 so it is riskier than the market. Whereas Pidilite, has beta <0 so the formula assumes it will reduce the risk of a portfolio.

A stock's beta is then multiplied by the market risk premium, which is the return expected from the market above the risk-free rate. The risk-free rate is then added to the product of the stock's beta and the market risk premium. The result should give an investor the required return or discount rate they can use to find the value of an asset.

The goal of the CAPM formula is to evaluate whether a stock is fairly valued when its risk and the time value of money are compared to its expected return.

1. https://finance.yahoo.com/quote/%5ENSEI?p=%5ENSEI
2. https://www.educba.com/systematic-risk/
3. https://www.investopedia.com/terms/c/capm.asp
4. https://www.legalmatch.com/law-library/article/long-term-vs-short-term-loans.html