A Analysis of 1 Tier 2 Teir & 3 Tier Architecture Using .NET Framework 4.0

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Abstract-T As we know that we are living in internet era & internet is playing important role in each area such like education, industries, offices, researchers. Now days most of organization use web application to work, so they can integrate multiple offices in simple and easy way. We can see the most of education institute like school, college are managing their data using web application even results are also available on internet. These recent grow of users of internet are from county of asia & Africa. The major problems of counties are that they have large number of users but they are slow internet speed compare to other part of world. So these counties should focus on method which can work on slow internet speed. You can insert data to database via following ways 1. One tier architecture 2. Two tier architecture 3. Three tier architecture.

Index Terms- one tier architecture, two tier architecture, three tier architecture, asp.net, framework 4.0

1. INTRODUCTION

In the era computer and internet world people want to do work on their work on laptops & personal computers. People don't want to go outside for work. One best example of these tread is that people using net banking instead of going to banks, people doing their mobile phone recharges using internet instead of going to shop. This approach is not new to the European & Americans but this approach is totally new to county like India, Srilanka, China, Bangladesh. These counties are heavily depends of paper work before five to seven years ago. Now days these courtiers are   use web-applications for their work. Online admission, school management, office management, billing systems, online examinations are the most common applications.

This is very good sign for world & people of these countries. but one problem is that these countries do not have fast internet connection. They are using shared internet connection. In shared manner when user increase their speed decrease. So web application developers must focus on the method that consume less internet speed & can work in less internet speed.

2. BACKGROUD

When we talk about static web-site then developer cannot do much things & static web-site consume less internet speed and display information only. User cannot interact in static web site. When user cannot enter any information and only see the information.

Dynamic web site/web applications have major speed issues in dynamic web application there are two major tasks. First task is to insert data into database and second major task is that retrieves or fetch data from database as per the need. Facebook, online result portal of any university is the example of the dynamic web application.

Now there are three types of method to insert data into database: one tier architecture, two tier architecture, and three tier architecture. Now developer should choose best approach as per the conditions so application should not suffer from speed issues. There are some other criteria like performance, availability and complexity play also important role. Web application architecture depends on different things like functional requirements (client, user), quality requirements (performance, scalability, and reusability), and technical aspects (system requirements, tools, technology) etc.

During development of any web application project manager/team leaders have to make decisions at planning stage. Choice right architecture is one of them the most important one. Architecture is a key point which tells that web application will meet client requirement. Let's see each approach one by one.

3. MODELS

When we talk about one tier architecture, it is very simple approach and easy to implement. Developers do not need any special database software like oracle, MS SQL server. In this approach developer can use MS access, MS Excel, XML file or even notepad file. Clients use file to insert data from client computers. MS access, MS Excel, XML files must be accessible from the local or shared drives. In this approach files are directly accessed by users.
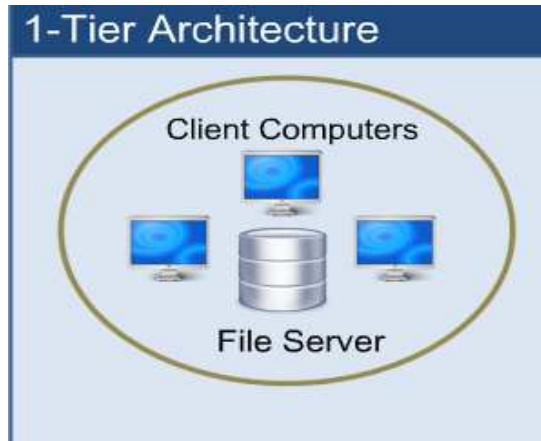
Figure1. one tier architecture model

User may modify or delete important data from file accidentally. This is major loop hole in security. Here all users have same permissions & roles. This approach can not deal with multiple users at same time

In two tier architecture client & server is evolved in communication. Client can access the database via connection string in his code. Client cannot see the database server. Client run the front end application & database handle the application data in back hand

Figure2. Two tier architecture

As you can see in diagram, Any programming language such as c#.net, php, java can access the database like orcle, mssql , db2 in this approach. Here Proper database software is needed to work. Data is much more secure compare to one tier approach. Database software provides various functionally like analysis the data, transaction locks, deadlock recovery, user management, SQL support, Roll manager. These functions of database make this approach more stable & useful to programmers. Major advantages of the approach are that development and maintenance is much easier. Drawback of the approach is that when more users in web application then performance is reduced. In this approach two to two hundred users can use web application at same time.

As we talk about three tier architecture , it involves three layers
1. Application layer (client layer)
2. Business layer (middle layer)
3. Data layer

In two tier architecture client is thick because it manages both application & business layer both. This requires a fast internet connection. This method is not so secure. In three tier architecture client handles only application layer (sometimes called presentation layer) so client become thin so it provides communication with no delay & much faster.
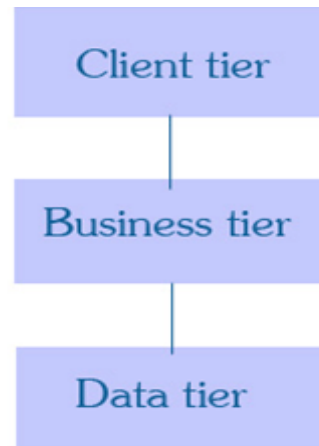

Figure3. Three tier architecture

Figure 3 showing complete architecture view of the three tier. Here client tier represent application layer. Client tier represent the graphic representation so user can communicate with the web application. Business tier use to make implement the rules for programming. It provides faster communication between application layer and data tier. Data tier handle database. Figure 4 show the details view of the three tier architecture. Advantages of the three tier architecture are more secure, fast communication, thin client. Drawback of the three tier architecture are very complex, costly, need more time to develop application.

Table 1. Table represent the compression between all

	1 TIER	2 TIER	3 TIER
ADV.	Simple No server	Secure Scalable	Thin client Secure
DISADV.	Multi users issues	Thick client	Complex Costly
USERS	1 or 2	Not more than 200	Handle large num bers
PERFORMACE	Poor	Depend on client hard ware & netw ork	Winner
COST	Not for	Winner	Need

	large applica tion		more time & cost
SECUIRITY	Poor	<1 tier	Winner
MAINTENCE	Easy	Easy	Difficult

4. WORKING MODEL

To check the of the architecture is fast, we have developed code in 2 tier architecture and three tier architecture. We are not using one tier architecture because it is not for multiuser. Visual studio 2010, MsSQL 2008 , framework 4.0 is used to develop this project. We have developed a application which has 9 textbox & data of these textboxes are stored in the database. For two tier architecture we are using simple approach which involve only front end & back end. For three tier architecture we are using three layers which include store procedures.

Table 2. It represent the practical compression

	TWO TIER	**THREE TIER**
TIME	2 HOURS	3.3O HOURS
LOC	230	613
COST	LESS	MORE
FAST	GOOD	BEST
SECURE	YES	YES (BETTER)

5. ACKNOWGEMENT

We cannot use one tier architecture for web application. When you need less secure application with low cost then you can choose two tier architecture. When web application is like bank application then you should go three tier architecture.

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