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# CHAPTER 5: IMPLEMENTATION

## INTRODUCTION

Building the system was the end game for all the effort the analyst put from chapter one up to the previous chapter. The completion of chapter 5 marks the beginning of all the tasks associated with building the system, ensuring that it performs as designed. At this stage, the programmer will carry out the time-consuming and costly task of writing programs. According to *Dennis, Wixo, and Roth (2012)*, on this phase, programmers will be transforming program specifications into working program code, the systems analysts will be designing a variety of tests that will be performed on the new system. As the programs are finalized, the systems analysts may conduct these tests to verify that the system actually does what it was designed to do.

## CODING

According to Bus206.pressbooks.com, Coding is the process of creating a set of logical instructions for a digital device to follow using a programming language. This process mostly called programming, by coding it’s because the syntax of a programming language is not in the form that everyone can understand – it is in “code”.

Coding comprises of the transformation of program logic into precise directives which are to be implemented in the system development. It involves translation of the design into the code of a programming language, *(Pham, 2000).* Multiple technologies were used by the developer to translate the designs shown in the previous chapter to the executable program that the mobile phones can run. Such technologies include Visual Studio Code (March 2019 version 1.33) as the text editor, Ionic framework version 3, Typescript 3.4.5, Angular 5.2 and Google Chrome browser. The developer also used Laravel 5.7, PHP 7 and Blade to develop a testing backend before implementing it on the actual Great Zimbabwe System. The following are the pseudo codes of the system modules.

## PSEUDO CODE

Pseudo-code is an informal way to express the design of a computer program or an algorithm, Dictionary.com defines it as a notation resembling a simplified programming language, used in program design. The aim is to get the idea quickly and also easy to read without details of the programming environment. It is a fake code that resembles how the real code will accomplish its specified task. The structured English was used independently of any programming language to produce the pseudo code. This was used for simplicity purposes since a system is easy to understand in English than when using the specific programming language codes. A lot of actions were illustrated using the pseudo code as follows

### Apply for a Place module

**Start**

Enter personal details

If entered and valid

Enter address details:

If entered and valid

Select three programme choices and enter intake type, entry type and sponsor

If entered and valid

Enter academic history

If entered and valid

Enter employment history

If entered or skipped

Enter two referees

If entered and all valid

Submit

If submitted

Redirect to social network share page

Else if any error

Repeat step until valid

**End**

### Login module

**Start**

Enter registration number and password

If entered and valid

Submit

Redirect to welcome page

Else if not valid

Show error message and repeat until valid

**End**

### Submit emergency module

**Start**

Select show or hide identity

Select emergency subject

Enter address

Enter phone

Enter emergency description

If valid

Submit

If token expired

Re-Enter password and submit

**End**

### Add payment module

**Start**

Open financials page

Select payment type from options: Tuition, Student Wallet, Accommodation…

Select Deposit (payment type)

Enter Ecocash mobile number

If payment confirmed

Update financials records

Refresh financial page to display new records

**End**

### Add timetable to calendar

**Start**

If exam time table is out

Show add to calendar button

If add to calendar

Confirm calendar permission and make a reminder

If confirmed

Add timetable to calendar

Else if not confirm

End

**End**

## SYSTEM AND FILE CONVERSION

At this stage, we are going to look at the activities needed to install the proposed system and successfully convert the organization to using it. It also discusses post-implementation activities, such as system support, system maintenance plan, and project assessment. According to *Dennis, Wixom, and Roth (2012)*, Installing the system is usually straight forward, the challenge comes on the training and other organizational issues surrounding the installation as they are more complex because they focus on people, not computers. Which means this section needs to be done thoroughly to avoid and overcome these issues for the success of the proposed system.

### Conversion Plan

Changing data, programs, the process from one system to another within an organization will be facilitated by ensuring that a number of business process, technical, and people issues are addressed. Conversion plan will guide these transition and they will also ensure that the business can continue its operation even in the event of technical glitches in the new system.

Technically this process includes installing any needed hardware and software and converting data as needed for the new system. The technical part is simple however the challenges comes when dealing with people ensuring that they adopt the new system and this is done by conducting user training and system manuals.

### Conversion Strategies/Types

A conversion strategy is a method by which the new system is introduced into the organization. These strategies can be categorized as Conversion Style – how abruptly the change is made. Conversion Locations and Conversion Modules.

#### Conversion Style

The change from the old system can be done gradually or abruptly. **Direct conversion** is an abrupt change which involves the instant replacement of the old system with a new system. The advantage of this is that it is pretty simple and straightforward as it is just turning off the old system and turning on the new system. However, this method poses the risk that if there is a missed bug in testing phase it may cause a catastrophic disaster to the organization.

Parallel Conversion is a gradual method of introducing a system in which both the old and the new system are used simultaneously for a period of time sometimes comparing the outputs of both the systems testing for performance. The old system will be discontinued when the organization is confident enough with the new system. This method reduces the risk by providing the organization with a fallback position if something went wrong with the new system.

#### Conversion Locations

This is a strategy whereby the new system will be introduced to different parts of the organization at different times or throughout the organization at the same time. **Pilot Conversion** is selecting one or more locations to be converted first as part of the pilot test and if it’s a success then the new system can be deployed to the rest of the organization. This gives an advantage of limiting the effect of the new system to just the pilot location. There is also **Phases Conversion** whereby the conversion is done as phases or sets for example first set converted, if its a success then converts the second set, and so on until all the locations are converted. **Simultaneous Conversion** is another conversion strategy where all the locations are converted at the same time hence eliminate the disadvantages of the above-mentioned methods of having different organizational units using different systems and process.

#### Conversion Modules

Usually, systems are installed in their entirety but it’s not always the case. **Modular Conversion** is a strategy of converting the only module of the system provided that they are distinct and separate. Advantage of this is that it reduces the costs of user training as the users are only trained for the new module being implemented.

### Recommendation

Since the proposed system is a Mobile Application version of the Student Portal, the best strategy is the parallel conversion as it doesn’t conflict with the current system in any way. The web version can work accessing the same data with the mobile application in parallel.

## TRAINING

Accepting the changing of the system is one thing, using it is another thing which requires skills and knowledge of how to use the new system. Training is a process at which the development team delivers the skills to the end users of the system, the organizational staff so that they will be able to use the new system. The following are the methods that can be used to deliver the training.

### Training Methods

**Classroom training** is the most used method of training end users which has the advantage of training many users at the same time with only one instructor and creates a shared experience among users.

Another method used for training is **One-to-One training** in which one trainer works closely with one user at a time. This is clearly more expensive, but the trainer can design the training program to meet the needs of individual users and can better ensure that the users really do understand the material. This approach is typically used only when the users are very important or when there are very few users.

Another approach that is becoming more common is to use some form of **Computer-Based training** (CBT), in which the training program is delivered via computer, either on DVD or over the Web. CBT programs can include text slides, audio, and even video and animation. CBT is typically costlier to develop but is cheaper to deliver because no instructor is needed to actually provide the training.

### Recommendation

The proposed system has almost everything that the web version has with few additional which doesn’t require intense training. The recommended method would be Computer-Based since it’s cheaper and easier to reach everyone through social media and electronic mails.

## MAINTENANCE PLAN

*Dennis, Wixom, and Roth (2012)* define system maintenance as the process of refining the system to make sure it continues to meet business needs. Once the system is successfully installed they are processes, components, modules, and users that changes, evolver or break which requires the continuous maintenance of the system. The organization spends more money, effort, and resources on maintaining systems than they spend on the development in order to keep the system relevant.

There are at least five situations in which systems can be maintained, the first being when the end users of the system discovered a **bug** that must be fixed. This is the most common which also requires immediate attention as it may cause a significant problem to the organization.

The second if when the end users requested an **enhancement** to the new system like a new functionality or a better or simpler way of doing the task. These enhancements are important in satisfying the users and are often key in ensuring that the system changes as the business requirements changes.

Request for **integration** with other systems is the third situation. Due to advancement in technology and social network this situation is common as the end users need to share, convert or access data from other systems.

The fourth situation is when the **environment** where the software is changed, for example, the introduction of Android Q, may have some major changes. The developer will need to ta care of that if they want their software to run on the new release platform.

The fifth situation that leads to maintenance is senior **management** request. This is when the management requested for maintenance for different reason like to keep it in line with the vision of the organization.

## CONCLUSION

The backup plan was intentionally left out as the analyst relies on the current system plan as the proposed system will make use of the current data. To conclude, this section shows detailed implementations of the system and all the plans and recommendation in place and it’s time to go over to the testing phase of the system.