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**SCHOOL OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY**

**DEPARTMENT OF INFORMATION TECHNOLOGY**

Project Title**:**

**PARTIME LECTURERS**

**PAYMENT MANAGEMENT SYSTEM.**

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DATE OF SUBMISSION**: 20TH JUNE 2018**

# DECLARATION

I declare that the project entitled above “Part time Lecturers Payment Management System”, submitted to the Department of Information Technology – Dedan Kimathi University of technology is uniquely prepared by me, to the best of my own efforts and the project documentation through my intensive research guided by Mr Gabriel Kamau.

I further declare that the work done in this project is my original work and contains no published work by any other person in partial or full for the fulfilment of a degree award in any other institution except where due reference is made.

Kuria Peter Kaora

Signature.

**Date submitted**

4th June 2018

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# ABSTRACT

My project is online Management systems that can help the management of any institution manage lecturers that are not on Full time basis.

A part time worker is personnel who supply their services on a flexible or irregular basis to meet the fluctuating demand of work taskforce. Part time workers are a boost to the permanent workforce and usually do not exceed the agreed period of time between the employer and the employee.

My system will help part time lecturers collecting students’ details in attendance of their sessions. Since the present students are prone to fill the attendance sheet for their absent colleagues, there is lack of data integrity in manual filling process, rendering the sheets unreliable.

The system is intended to be web based, which will not only enhance real time updates but also quality control and quality assurance.

# List of Abbreviation and symbols.

* IT – Information Technology
* SDLC – Software Development Life cycle.
* HRM – Human resource management.
* IT – Information technology.
* BI – Business intelligence
* DSS – Decision Support

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# Chapter 1: Introduction

## Background Study

The percentages of the types of employment in Kenya have rapidly been changing in the past few decades, where the graph of casual and part time type of employment taking the lead in the country. Employers are drawn to hire casual and part time laborers because they are thought to contribute to lower labour costs and work flexibility (McNamaran, 2006). The changes have an effect that leads us into looking beyond the increasing seemingly uncomplicated employee – employer relationship and how they are being handled.

Part time employees are employees with an ongoing employment or (fixed-term contract), usually expected to work regular hours in every week of the month. They are usually entitled to paid sick leave and an annual leave. (employee entitlements, 2017).

In 1999 contingent workers accounted to nearly thirty percent of the United States taskforce (Brustein, 2005). According to Clyde Summers, part time employment was the most prevalent form of contingent employment (Summers, 1997)

Studies show that the percentage of part-time workers in the United States is continuing to increase. Since there are no signs that this trend will be slowing down, managers are trying to find the best ways to adjust to this new way of doing business.

One of the most common myths is that [hourly workers](https://www.humanity.com/blog/managing-and-engaging-hourly-employees.html) are not as effective as full-time employees. In fact, they are just as valuable in today’s workforce, if not more so. And just as you would like to retain all of your best full-time workers, you should also be thinking about how to keep your part-time employees content enough to stay with you for the long haul. (Galic, 2015)

## 1.2 Problem statement

In the management of part time lecturers there is usually a high uncertainty to the management during the payment claiming process that any particular lecturer attended all their lessons and whether all the students attended their classes as the attendance sheets indicate. This is because there is no real time monitoring of the presence of both parties.

This has caused reliability and trustworthiness of the records collected, from the students weekly or daily registration of credentials. Since they are highly prone to fabrication to accommodate even the absent students as well.

There has also been high mismanagement of funds arising from overpayments or underpayments of the work done by every staff, like paying of ghost workers and underworking.

My solution need to help the management on day to day recording of the of tasks based within the period an employee dedicated themselves to, calculating payments based on the hours of work, and also help in providing operational monitoring and performance status that would help in decision making and planning.

## 1.3 Objectives

The objectives of this research are:

1. To authenticate and auto fill the required register forms for an effective processing of information to eliminate manual registration forms that are prone to fabrication.
2. To automate the manual filling of payment claim forms.
3. To visualize, design, develop and test an online platform for part time lecturer’s data collection, automated analysis and filling.

## 1.4 Research scope

The research focused on the manual process used by part time lecturers to collect students in attendance records and manual filling of the claim form for their payments processing. Claim form needs a manual attention to fill the number of hours worked for, unit codes and total claims for verification by the school director before the forms can be forwarded to the registrar academic affairs for a second verification to the finance. The documents have always proved unreliable, where the absent lecturer sends the attendance form to the class representative weeks after, where students present fill for their colleagues who never attended the classes.

Data Integrity however, can only be achieved by using quality control and quality assurance. Quality assurance can be achieved where the both the student and the lecturer has to be present, the lecturer opens his account and authenticate students details present on that particular class.

Quality control can also be achieved where some crucial data that was to be filled manually is automated by the system.

## 1.5 Assumption

1. All lectures have Finger print reading devices or enabled phones.
2. All lecturers always have an access to the internet.

## 1.6 Limitations.

### 1.6.1Time limitations

In the research study process, the researcher has other activities being involved in hence inadequate time frame might be a limitation when it comes to effectively completion of the study. It is however vital for the researcher to make sure that adequate time was scheduled for all study area before the expiry of every bound time frame by their supervisor.

### 1.6. 2 Data limitations

Data is not adequate to meet the stated researcher’s objectives, due to unavailability of some key stakeholders. Some available stakeholders to the system have no adequate information to provide which has forced the scale down of the scope of the study.

## 1.7 Justification

The findings of this study are relevant to employers in the management and payment of Part time teaching staff. The functionality of the system is vital to governmental, non-government organizations; temporary labour organizations to enable them fight for equal payment rights of part time teaching workers and also gather information on challenges these institutions experience handling their part time employees who are away from close monitoring.

# Chapter 2: Literature Review

## Introduction

This research section gives more details on related studies and what has been done by various authors in relation to the study. It explains how payments management systems   
are applicable and the general concepts about system intelligence and the effects of using the later in organization systems.

## 2.2 Case studies.

### 2.2.1 Labour Contract types.

There are various types of labour or employment contacts that can broadly explain the terms of employment, employees are subjected to. These contracts usually help to clearly define both the employees and the employers’ roles and terms of work agreed between them. An employer is an individual, organization or any legal unit that has in its possession one or more individual (s) performing a certain task in exchange for some cash.

#### 2.2.1.1 Full-Time or Permanent Contracts

They are generally offered for permanent positions and usually set out for and have no minimum number of hours they must work on. With respect to the United Kingdom protection of employees fixed term work act, 2009 a permanent employee is entitled to a monthly or annual salary, leave and other employment benefits and allowances.

Permanent Contracts must be put in writing since because they are usually on trial periods, salaries and exclusion. A trial period is the initial working stage of the first contract which could be, but not limited to a period of three months, which allows the employer to evaluate the employee’s capabilities while the employee analyses the conduciveness and convenience of the working conditions provided by their employer. The Salary is the form of employee compensation that includes all employee benefits including travel, accommodation, insurance and health benefits. The Exclusions refers to the deductions of legal fees and payroll taxes from the salary (Heshmati, 2008).

#### 2.2.1.2 Part-Time Employment Contracts

With respect to International Labour Organization: Labour Definition Program in 2011 a Part-time employment contract is almost similar to a full-time employment contract but the difference is that it is a seasonal form of employment and hence the employee’s working hours and payment differ from the full time contracts. The contract’s duration is usually but not limited to 6 months to a year. In other organizations, part-time status makes an employee ineligible for any benefits. They traditionally worked less than a 40 hour work week (HeathField, 2018).

### 2.2.2 Operation and Impacts of Part time and Full time employees in Business

In the past 2 decades there has been a significant increase in interest by practicing managers and academic researchers in the labor/staff scheduling decision. Specifically, service firm managers have greatly focused their attention on improving the productivity of their labor intensive operations by increasing the use of part-time personnel. This move has been motivated by the existence of significant variations in hourly and daily workloads faced by these firms contrasting with their desire to provide flexibility to adequately match staff capacity with client’s demands. The past employment practice of acquiring full-time staff has greatly caused significant idle capacity to exist in many firms, reducing the productivity capacity. The increasing use of part-time staff has allowed managers to adjust this situation by reducing the amount of idle labor capacity, which has proportionally reduced the operating cost

Academic researchers have also been investigating the labor scheduling problem. They have analyzed and evaluated mathematical algorithms, optimal and heuristic, to efficiently solve the staff tour scheduling problem. However, most of these studies have focused on the scheduling of full-time staff to meet varying daily and hourly work load shifts and a little insight has been attained so far in understanding a number of trade-off issues in this field (Showalter, 1990).

### 2.2.3 Business Intelligence Techniques for decisionn support

Decision support system is a technological application platform that assists managerial decision makers utilizing data and analysis models to solve projects. This review looks at the general issues on distributed support systems technologies into HRM (Human Resource Management) domains.

Human is a very important and a very valuable asset for an organization and managed by the human resource professional. Human resource management is an important element in the success of an organization. Activities in human resource involves a lot of processes such as staffing, training, motivation and appraisal, besides that decision making process in human resource management depends on human judgement and preference. Human decision are as well subjected to limitations because sometimes people tend to forget the crucial details of the problems, but fairness and right decision procedures are very crucial in any type of decision. (Hamidah Jantan, 2010)

Application systems as DS making tools can be used to provide fair and reliable decisions at the same time improve effectiveness of decision making processes.

### 2.2.4 The Cost of Absenteeism for employees.

Research done by the [U.S. Department of Labour](https://www.shrm.org/resourcesandtools/tools-and-samples/toolkits/pages/managingemployeeattendance.aspx) in 2015 predicted that the percent of a company’s staff absent daily was at least 3 percent. According to the [Bureau of Labour Statistics](https://www.bls.gov/cps/cpsaat47.htm), the Labour Force Statistics from the Current Population Survey, there was a total of 2.8 thousand days missed among the 113,154 full-time wage and salary employees found in the US in 2017.  The amount per employee has changed little since 2015, in which the cost per employee was roughly [$1,685 a year](https://www.cdcfoundation.org/pr/2015/worker-illness-and-injury-costs-us-employers-225-billion-annually). For [mental health-related absences](https://fitforwork.org/blog/common-causes-of-work-absence/), employers in the UK can expect to pay up to £8.4 billion a year.

For instance, employers in the UK can anticipate paying at least [£500 per employee each year in absenteeism costs](https://www.cipd.co.uk/Images/absence-management_2016_tcm18-16360.pdf). According to the Office for National Statistics, [137 million working days were lost because of sickness or injury in the UK in 2016, or the equivalent of 4.3 days per worker](https://www.personneltoday.com/hr/annual-sickness-absence-rates-show-little-change/).

In Ireland, an employer can expect to pay roughly [€569.64](http://www.sfa.ie/Sectors/SFA/SFA.nsf/vPages/News~absence-costs-small-business-over-%E2%82%AC490-million-per-annum-17-02-2015?) per year per employee.  [The Department of Public Expenditure’s research](https://www.irishtimes.com/news/ireland/irish-news/sick-leave-rates-still-high-in-parts-of-public-service-donohoe-1.2715092) on 250,000 workers in Ireland revealed that each full-time Civil Service employee used 10.2 working days for absences.

Absenteeism in the workplace is a severe problem in Australia. Research reveals that [5 percent of the total Australian workforce](https://thirdsector.com.au/absenteeism-in-the-australian-workplace/) will be absent of any given day, and the total yearly expense for handling planned and unplanned absenteeism is as high as $33 billion.

There are also [other consequential costs of employee absenteeism](https://businesscoverexpert.com/blog/business-critical-illness-cover/) that are not financial (but may indirectly affect profitability): (the- -prevalence- of-employee- absenteeism)

* Low employee morale
* Management frustration
* Negative customer feedback
* More employee overtime and workload

## Summary

In this review am investigating the complex issues of the trade –offs between full time employees and part time employees with the measure of flexibility for using part time staff, how we can reduce idle labor capacity and ensure full commitment in the absence of the employer.

I have reviewed how “schedule compression and monitoring,” can be attainable in terms of recording worked hours per week.

Third, we can attain the reduction in idle labor hours schedule can be attainable with increased monitoring of part time employee operations.

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# Chapter 3: Methodology

## 3.1 Introduction

This chapter identifies and explains the requirements design and implementation methodology that can best be used to develop the entire system effectively.

## 3.2 Solution

**3.2.1 Planning**

All possible requirements of the system to be developed will be captured in this phase. The requirements will be categorized into functional and nonfunctional requirements before being documented in a requirements specification document.

**3.2.2 Requirement Analysis**

In this phase we will study the requirement specifications from the planning phase. This will help us to understand user expectations from the system.

**3.2.3 System Design and Analysis**

This system design helps in specifying hardware and system requirements and helps in defining the overall system architecture. The requirements of the users will be taken into account. Moreover, evolving requirements will be considered as they come up to make the system better every day.

**3.2.3 Implementation**

With inputs from the system design and analysis stage, I will develop the system first in small programs called units, which I will then integrate in the next phase.

**3.2.4 Testing.**

Testing will be carried out by system users and will continue to be undertaken to verify that the modules are achieving the intended objective. This will involve activities such as checking for data validations and correctness of processes. Adjustments will be based on the feedback received from the users.

## 3.3 Development method

The system employs iterative software development methodological approach with Object Oriented Programming as the best designing and programming technique for the system

Iterative with incremental SDLC Model is a method or process in which a software product is developed after breaking it down into smaller, easily developable chucks of code (Quickscrum, 2016). This method begins by specifying and implementing just part of the software which is now then reviewed to further requirements. It enhances the evolving versions until the whole system is implemented (Point, 2018). At each stage of development design modifications are made and new functionalities are added into the system. Iterative development aims to develop a system in repeated cycles and in smaller portions at a time.

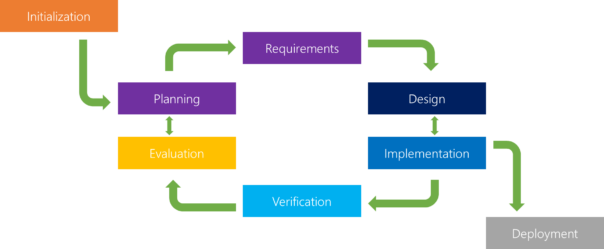


Figure 1: Methodoloby

Iterative Model (Powell-Morse, 2016)

## 3.4 Data collection methods

This project applied five fact finding techniques during the requirements collection, which I found most suitable due to the significance they hold.

1. **Observation**

Two months were taken to observe how the attendance sheet signing is carried out by the students without the knowledge of or in the absence of the lecturers. I noted the tendency of students signing for their fellow absent students and so imagine how we can eliminate the manual process and ensure that the data collected is reliable.

1. **Interviews**

Personal interviews were through one-on-one discussion with some of the lecturers, collecting student’s opinions and the programs office academic affairs on verification of the lecturer’s payment claim where I also got to enquired on the procedures lectures have to go through before they can be paid their salaries. The **4W’s** of **who**, **what**, **when** and **why** provided important facts that which helped in identifying the need to fill the Gap. This technique was efficient in finding, verifying and Clarifying facts. Involving the stakeholders also helped us identify the user requirements.

1. **Questionnaires**

I decided to use an open questionnaire in facts collection which involved clear and concise questions and also avoided compiling opinionated research statements. The questions were short and simple to understand for our respondents considering technology literacy.

1. **Research and Site Visits**

The second fact finding technique was thorough an intensive research on the existing challenges. I read journals, blogs, articles, reference books and visited websites which had content to do with laborers and how they relate with their employers. In the literature review, I extensively mentioned several sites visited during our research. I acknowledged the developer’s efforts for their time and great ideas that they expressed in their sites. I borrowed some of facts from these sites. At the same time, I were able to gather the facts about what already exists in this area, and what we think should be done to improve the situation.

1. **Study and sampling of existing Documents, Articles and Databases**

Some of facts were collected from existing documentation. These documents include customers’

Complaints, evolutions and history of related projects, past and present information systems project requests, samples of manual and computerized databases. This provided us with crucial facts about the niche available in this service providing industry.

## 3.6 Justification for the method

Here the software is Brocken down into smaller chunks a feature’s code is designed, developed and tested in repeated cycles. With each iteration, additional features can be designed, developed and tested until there is a fully functional software application ready to be deployed to customers.

Continuous testing is the only way to avoid bottlenecks.

## References

Brustein, A. H. (2005). *Casual Workers And Employee Benefits Staying Ahead Of The Curve.*

*employee entitlements*. (2017, December 12). Retrieved from Fairwork.gov.au: https://www.fairwork.gov.au/employee-entitlements/types-of-employees/casual-part-time-and-full-time/casual-employees

Eurofound. (2017, May 11). *Observatories*. Retrieved from Eurofound.europa.eu: https://www.eurofound.europa.eu/observatories/eurwork/industrial-relations-dictionary/casual-worker

Galic, D. (2015, April 24). *Tips for managing part time staff the right way.* Retrieved from Humanity: https://www.humanity.com/blog/7-tips-for-managing-part-time-staff-the-right-way.html

Hamidah Jantan, A. R. (2010, March 01). *Intelligent Techniques for Decision Support in Human Resource Management.* Malaysia.

HeathField, S. M. (2018, March 05). *Human resources*. Retrieved from the balance careers: https://www.thebalancecareers.com/what-is-a-part-time-employee-1918220

McNamaran, M. (2006). *Hidden Health and Safety Costs of Casual Employment.* University of New South Wales, Industrial Relations Research Center, New South Wales.

Point, T. (2018). *SDLC*. Retrieved from Tutorial Point: https://www.tutorialspoint.com/sdlc/sdlc\_iterative\_model.htm

Powell-Morse, A. (2016, December 15). *Blog.* Retrieved from A: https://airbrake.io/blog/sdlc/iterative-model

Quickscrum. (2016, May 22). *What is Itearative software development?* Retrieved from Quickscrum: https://www.quickscrum.com/Article/ArticleDetails/2030/5/What-Is-Iterative-Software-Development

Showalter, M. A. (1990, April 2). Measuring the impact of part-time workers in service organizations. *Journal of Operation Management*, 209-229.

Summers, C. (1997). Contigent employment in the united states. *18 CoMP. LAB. L.J.*, 503.

*the- -prevalence- of-employee- absenteeism*. (n.d.). Retrieved from Advanced Systems: https://advancesystems.ie/the-prevalence-of-employee-absenteeism-infographic/

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# Appendices

## Time schedule

Table 1: Time Schedule

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Activity** | Month  1 | Month  2 | Month  3 | Month  4 | Month  5 | Month  6 | Month  7 | Month  8 |
| Planning |  |  |  |  |  |  |  |  |
| Requirements  Gathering & Analysis |  |  |  |  |  |  |  |  |
| System Design & Analysis |  |  |  |  |  |  |  |  |
| Implementation |  |  |  |  |  |  |  |  |
| Testing |  |  |  |  |  |  |  |  |
| Deployment |  |  |  |  |  |  |  |  |

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## Budget and Resource Allocation

Table 2: Budget

|  |  |  |
| --- | --- | --- |
| Resources Needed | Description | Estimated Cost |
| Hardware | PC, Printers and Documentation Material, Network Cables, Storage Disk(16 Gb plus) | Sh. 45,000 |
| Software | Dreamweaver, Sublime text, Atom | Sh. 4,000 |
| Manpower | Expertise, advisors, Coding assistants. | Sh. 100, 000 |
| Other Resources | Internet connection/ data subscriptions, Transport | Sh. 25, 000 |
|  | Total Estimated Cost | Sh.174, 000 |

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