# A Suite of Mobile Applications based on Red5 Media Server

**Extended Title**:  A Suite of Mobile Applications based on Red5 Media Server

**Brief Description of The Project / Thesis with Salient Specs**:

The goal of this project is to create a mobile based transmission engine (Android or Adobe Flash-based) that can record audio stream and store it directly to a Red5 server (remotely hosted). The audio stream can have various aspects and applications; for instance,

1. The recorded audio can be a message that can be played back from any suitable client platform (whether mobile based or PC –based) as long as it can access the Red5 server. A probable usage is an office dictator where a boss can record his/her message or any dictation using his/her mobile phone that can be later accessed by secretary.

2. Another application can be based on Speech-to-Text Convertor that can be used to speak out a text message to your phone (instead of typing it). The written text can be then sent to respective receiver. A prototype application for recognizing Urdu voice and trancripting it as *"Roman Urdu"* would be an interesting aspect. In the wake of fast and yet cheaper data communication through mobiles) and ever-growing interest of people to send SMS (rather than voice calls), this application has potential to be commercialized.

3. It can also be used to control the functions of your cell phone using voice commands.

**Scope of Work** :

**Academic Objectives** :

Mobile application development (preferably in Android)

Java, Adobe Flash Programming

**Application / End Goal Objectives** :

The goal of this project is to create a mobile based transmission engine (Android or Adobe Flash-based) that can record audio and stream and store it directly to a Red5 server.

A suite of potential applications for demo.

**Previous Work Done on The Subject** :

**Material Resources Required** :

None

**No of Students Required** :

3

**Special Skills Required** :

Strong programming skills in Java.

**Approval Status**     **Supervisor Name & Signature**:          Dr. Hammad Afzal

**Assigned to**:_____ **HoD Signature** _____

**R&D SC Record Status**      **File #** _____   **Coordinator Signature** _____

| **Extended Title**: Crime File System (*Online Reporting a Crime* AND *Managing Criminal Record*) |
|---|
| **Brief Description of The Project / Thesis with Salient Specs**:<br>Must be familiar with scenes in Hollywood movies, with police searching for any record of criminal, and system returning his/her biography along with photographs. Also, reporting a crime sometimes gets cumbersome due to procedural delays. These problems can be solved by using a centralized system for crime registration (with Web based or mobile based clients interface). The typical information that can be stored is given below.<br><br>Criminal Records. (Criminals' profiles)<br>Classification of Crimes (Their grading according to the severity)<br>Database of Police Stations (and their staff) – This can be used for authenticated access to data).<br><br>**Some interesting features**:<br>Ubiquitously available cell phones with digital cam embedded can be used for enhancing crime reporting using mobile phone based application. Crime location scenes can also be used while reporting crime.<br>General public can be encouraged to provide information related to crime (if they hold any information that can assist in solving the cases). |
| **Scope of Work**: |
| **Academic Objectives** :<br>Database Management Systems, Web and Mobile based client application. |
| **Application / End Goal Objectives** :<br>A server application storing, maintaining and managing access to crime records. |
| **Previous Work Done on The Subject** : |
| **Material Resources Required** :<br>None |
| **No of Students Required** :<br>3 |
| **Special Skills Required** :<br>Java (and PHP). Any RDBMS |

**Approval Status**   **Supervisor Name & Signature**:        Dr. Hammad Afzal

**Assigned to**:_____ **HoD Signature** _____

**R&D SC Record Status**     **File #** _____ **Coordinator Signature** _____

# A Mobile Based Patient Medical Data Entry Assistant

**Extended Title**:  A Mobile Based Patient Medical Data Entry Assistant.

**Brief Description of The Project / Thesis with Salient Specs**:
In remote areas, patient's records are maintained in paper-based repositories which are in-effective and very outdated in current digital age.

Also, communication using mobile phones is getting very cheaper, and with emergence of high bandwidth technologies (like EDGE), their use for effective, reliable and cheap data transmission even from remote areas of country is highly encouraged.

The aforementioned two factors give motivation for application that can be used by medical staff (doctors) etc in remote areas to store/access patient information in a centralized server.

A Web based client interface can also be developed to be used in those medical units which are better equipped with computers and some means of data communication (Dial-up, DSL)

**Scope of Work** :

**Academic Objectives** :
Mobile application development (preferably in Android)

Java/PHP, Web development

RDBMS (MySQL/SQL Server)

**Application / End Goal Objectives** :
Development of a knowledge-base (database) comprising the patient records.
A client application (can be a Web interface, a desktop application or mobile application) for
    demonstration.

**Previous Work Done on The Subject** :

**Material Resources Required** :
None

**No of Students Required** :
3

**Special Skills Required** :
Java, Web development. RDBMS (MySQL/SQL Server)

**Approval Status**     **Supervisor Name & Signature**:          Dr. Hammad Afzal

**Assigned to**:_____ **HoD Signature** _____

**R&D SC Record Status**     **File #** _____ **Coordinator Signature** _____

# A Portal of Linked e-Government Data

**Extended Title**: A Web Based Information System for e-Government

**Brief Description of The Project / Thesis with Salient Specs**:
A Web based portal that can integrate information from various ministries in Pakistan (their websites) and provide access to them in user-friendly and unified interface. Advantage of the scheme is that, currently data is not shared among various organizations/ministries and they are all working in separate islands with no inter-connections and inter-operability. Semantic Web Technologies can be used along with traditional Web based techniques including RDBMS (any), Web development (PhP/Servlets) etc.

**Scope of Work** :
Initially, the project's scope can be limited to Education and Health Ministry (or in case of local governments: Rawalpindi Municipal Committee). The point of start will be *.gov.pk* domains.

**Academic Objectives** :
Java/PHP, Web development

RDBMS (MySQL/SQL Server)

Semantic Web technologies (RDF)

**Application / End Goal Objectives** :
A knowledge-base comprising the organizational data for different government organizations.
An application (can be an e-Portal, a desktop application or mobile application) for demonstration.

**Previous Work Done on The Subject** :
During last year, governments are willing to **open** and **share** their data and a number of projects have been initiated in this direction. A detailed overview of these initiatives is out of scope for this document; however, few links are given below (if reader is interested in more details).

- http://data.gov.uk/  http://www.data.gov/

**Material Resources Required** :
None

**No of Students Required** :
3

**Special Skills Required** :
Java, Web development. Familiarity with XML and XML based languages.

**Approval Status**     **Supervisor Name & Signature**:        Dr. Hammad Afzal

**Assigned to**:_____ **HoD Signature** _____

**R&D SC Record Status**     **File #** _____ **Coordinator Signature** _____

# e-MIS: An electronic Medical Information System

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|---|
| **Extended Title**:  e-MIS: An electronic Medical Information System |
| **Brief Description of The Project / Thesis with Salient Specs**:<br>An Information System to store and manage Medical Data (Medical Patient Record Systems) at a central system and access/populate it from various medical centers that are spread throughout the country, for examples *Basic Health Units (BHU)*, *District Health Units (DHU)*. The motivation is that, currently when a patient moves from a village where his info is recorded in BHU, to any district hospital, the summary of his/her medical conditions and previous medications cannot be transferred because it is paper-based and is collected again. Moreover, the data about medical experts along with their area of specialization, when managed in suitable medium, will facilitate the patient care more effectively. |
| **Scope of Work** :<br>Initially, the project's scope can be limited to *Basic Health Units* and *Rural Health Centers* in Rawalpindi District. The starting point of collecting useful information will be the website managed by Punjab Health Sector Reforms Sector (PHSRS) |
| **Academic Objectives** :<br>Java/PHP, Web development<br><br>RDBMS (MySQL/SQL Server)<br><br>Semantic Web technologies (RDF) |
| **Application / End Goal Objectives** :<br>A knowledge-base comprising the ontologies for People (Medical experts, Patients, Support Staff),<br>    Equipment, Locations<br>An application (can be an e-Portal, a desktop application or mobile application) for demonstration. |
| **Previous Work Done on The Subject** :<br>•     Health Level Horizon at SEECS<br>•     National Health Service (NHS) UK |
| **Material Resources Required** :<br>To be filled. |
| **No of Students Required** :<br>4 |
| **Special Skills Required** :<br>Java, Web development. Familiarity with XML and XML based languages. |

**Approval Status**      **Supervisor Name & Signature**:          Dr. Hammad Afzal

**Assigned to**:_____ **HoD Signature** _____

**R&D SC Record Status**      File # _____ **Coordinator Signature** _____

# A Topic Focused Web Crawler

**Extended Title**: A topic focused Web crawler

**Brief Description of The Project / Thesis with Salient Specs**:

- Web Crawler: Computer program that browses the World Wide Web in a methodical, automated manner or in an orderly fashion. Other terms for Web crawlers are ants, automatic indexers, bots, or Web spiders, Web robots
- Search Engines: Web crawlers are mainly used to create a copy of all the visited pages for later processing by a search engine that will index the downloaded pages to provide fast searches.
- Also, crawlers can be used to gather specific types of information from Web pages, such as harvesting e-mail addresses (usually for spam).

**Main features of the project:**

- Topic Focused Web Crawler (particularly for URDU Newspapers)
- Only the pages that are relevant to a particular topic are retrieved. Topics will be matched using lexical and contextual term similarity metrics. For this purpose, Term similarity techniques will also be created.
- This can be used to further development of a specialized URDU Search Engine

**Scope of Work** :

Initially, the websites which are using Urdu characters such as BBC Urdu, Urdu point etc.

**Academic Objectives** :

- Learning the functional working of Web crawlers, Search engines.
- Familiarity with Information Systems (particularly Web),
- Knowledge/Information organization and extraction.

Learning of Text processing tasks, such as: Approximate lexical based term similarity techniques such as edit distance based, n-grams based and their adaptation for Urdu language

**Application / End Goal Objectives** :

A Topic focused Web Crawler.

A Web interface for Crawler.

Term similarity measures for Urdu language.

Controlled Vocabularies in Urdu for a few topics (chosen for experiments)

**Previous Work Done on The Subject** :

- There are topic focused crawlers for various domains (e.g. bioinformatics).

**Material Resources Required** :

To be filled.

**No of Students Required** :

3

**Special Skills Required** :

Java, Web development.

**Approval Status**     **Supervisor Name & Signature**:        Dr. Hammad Afzal

**Assigned to**:_____ **HoD Signature** _____

**R&D SC Record Status**     **File # _____ Coordinator Signature _____**

# An Article Classifier

**Extended Title**:  An article classifier.

**Brief Description of The Project / Thesis with Salient Specs**:
An article classifier is a tool that classifies the given articles according to the topics/domain. In the current era of textual data abundance where we are drowning in data, retrieving focused information of interest is becoming challenging. A few applications of article classifier are given below:

**Example Applications**

1. Whether the web page, or section of web page is related to national/international politics, entertainment industry, or any particular event, any particular personality.

2. The web page under consideration is pro-government/against government

3. Analysis of News headings/top stories / photo captions – Comparison of different newspapers. e.g. "Rise and Fall" of **Phet** cyclone.

4. Lessons learnt from Katrina Hurricane / Comparisons

**Scope of Work** :
Initially, the websites which are using Urdu characters such as BBC Urdu, Urdu point etc.

**Academic Objectives** :
- Personalization of Information based on person-specific needs.

- Learning of Text processing tasks, such as: *Approximate lexical based term similarity techniques* such as edit distance based, n-grams based and their adaptation for Urdu language, various *machine learning techniques for document/text classification/clustering.*

**Application / End Goal Objectives** :
Automatic Article Classifier and its applications.

**Previous Work Done on The Subject** :
- There are article classifier developed for various domains (in English)

**Material Resources Required** :
To be filled.

**No of Students Required** :
3

**Special Skills Required** :
Java, Web development.

**Approval Status**          **Supervisor Name & Signature**:          Dr. Hammad Afzal

**Assigned to**:_____ **HoD Signature** _____

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