BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI
WORK-INTEGRATED LEARNING PROGRAMMES DIVISION
SECOND SEMESTER 2016-2017
COURSE HANDOUT

BITS ZG628T Dissertation
(For students of M. Tech. Software Systems)

COURSE INSTRUCTOR: SUPERVISOR OF STUDENT CONCERNED

SCOPE AND OBJECTIVES

Consistent with the student's degree programme, professional background and work-environment, the student will be required to carry out an **original**, **significant research and/or or development project independently**. The chosen topic of work should be non-trivial, analytical, application-oriented and should involve substantial research and/or development effort based on a specific theme. Students should choose only topics for which the work done can be presented, demonstrated, and defended before a panel of examiners at BITS, Campus. **Any attempt at plagiarism or use of unfair means will result in severe disciplinary action.**

The student should preferably select an area of work that is considered vital to the employing organization. The student, in consultation with his/her Supervisor, identifies the topic of the Dissertation and prepares the detailed Dissertation outline.

Each student will also be assigned to one of the BITS faculty identified who will provide feedback/suggestion on the outline and Mid-Semester Report submitted by student and participate in conducting the final Viva/evaluation. Further details of this will be communicated to students later.

The student carries on with the Dissertation adhering to the guidelines provided in the course handout, submitting all the prescribed evaluation components in time. At the end of the semester, the student should submit a comprehensive Dissertation Report to the Institute for evaluation and defends the Dissertation before a panel of faculty examiners from BITS, Pilani.

The student will be evaluated on the basis of the various interim evaluation components, contents of the report and the final Seminar as a Viva-Voce at the end of the semester. **The final grades for Dissertation are Non-Letter grades namely Excellent, Good, Fair and Poor. Since no grade point are attached with Non-Letter grades so the Non-Letter grades do not go into CGPA computation.**

DISSERTATION EVALUATION SCHEDULE

S. No	Evaluation Component	Scheduled Last Date for the documents to reach BITS, Pilani
1.	**# Upload softcopy** of Outline Report and Evaluation Sheet on Taxila LMS	January 12, 2017
2.	Allotment of Faculty Mentor	January 23, 2017
3.	BITS faculty provide feedback on the outline	January 30, 2017
4.	**# Upload Soft Copy** of Mid-Semester progress report and Mid-Semester Evaluation Sheet	February 27, 2017
5.	BITS Faculty provide feedback on the Mid-Semester Progress report	March 6, 2017
6.	**# Upload softcopy** of Final Dissertation Report, Pre-Final Evaluation Sheet, and Final Presentation (all in PDF format)	March 27, 2017
7.	Announcement and Students book date **for Net Viva***	March 29- April 2, 2017
8.	**Final Viva (online)**	April 2017

*** Students will be able to select Viva date only if the Final Report has been submitted (upload Softcopy) by the due date.**
 # If any portion of the work/report is found to be plagiarized, the student will be liable to severe disciplinary action.

Note : Requests for extension of deadlines for submission of documents or evaluation sheets will not be entertained in any case.

Important Instructions

1. **Soon after Registration, the student must submit the soft copy of the Dissertation Outline document and the Dissertation Outline evaluation sheet. The document must contain the following items:**

    1. Proposed topic of Dissertation
    2. Broad Academic Area of Work
    3. Background
    4. Scope of work
    5. Objectives
    6. Plan of work (to be done during the semester)
    7. Literature references, and
    8. Particulars of the Supervisor as well as one Additional Examiner (Name, Qualification, Designation, Employing Organization, and contact information).

2. The Mentor can be the Supervisor. The Supervisor will act as guide and one of the examiner for the student. In case the Mentor is not the Supervisor, he/she must be the Additional Examiner. The chosen Supervisor / Additional Examiner must have qualification equivalent to that of the Mentor. **The Supervisor and Examiner must be two different individuals. The same person cannot act as both the Supervisor as well as Examiner for the same student.**

3. Students who are currently enrolled in M.Tech. SS/MM/CM/QM or M.Phil HHSM cannot be Supervisors/ Examiners/ Mentors for other BS/MS Students doing Project Work/Dissertation.

4. The Mid-Semester Evaluation will be based on the progress report describing the Work Progress and achievement, and the Mid-Semester Seminar/Viva to be conducted by the Supervisor.

5. The student should submit the Final Dissertation Report (pdf format) to the Supervisor and Additional Examiner, atleast two weeks before the deadline. The Supervisor should evaluate the final report and conduct the pre-final seminar and viva-voce for the student, alongwith the additional examiner. **The Supervisor and the Additional Examiner should jointly complete the pre-final evaluation sheet and recommend the pre-final grade for the Dissertation.**

6. **Student should upload the soft copy of the final report, Pre-final Evaluation Sheet and final presentation (pdf format) latest by March 27, 2017**

7. We do understand that all BITS WILP students are employed professionals with their own professional and personal constraints. We expect all students to coordinate with their Supervisor and Examiner and submit all documents and evaluation sheets as per schedule given in the handout.

8. **The students must submit the Outline, Mid-Semester Progress Report and Final Report in the specified format (Check the instruction on E-learn Portal for the same) by the specified deadlines, even if the evaluation by the Supervisor/Examiner is not available by the deadline.** The scanned copy of the evaluation sheets duly signed by the Supervisor and Examiner can be submitted online separately within one week from the specified deadline, but before the scheduled final viva date.

9. **Requests for extension of deadlines for submission of documents or evaluation sheets will not be entertained irrespective of the reasons.**

10. The Cover Page, Title Page, Abstract and the Certificate from the Supervisor must be prepared in the Prescribed format (with appropriate page fonts and layout) as given in annexures to this course handout.

11. The report should be properly organized and neatly formatted with all the elements required for a technical report. It should be adequately descriptive and elaborate and should be self-contained with respect to the chosen topic. **The title should be adequately descriptive, precise and must reflect scope of the actual work done.** Each chapter should start from a fresh page. Each chapter should be atleast two pages. The report should be neatly word-processed in A4 Size paper, printed on one side of the sheet and presented in a 'Portrait' layout (and NOT in 'Landscape' layout). **Printouts of Powerpoint presentations or product documentation (like program code listing or user manual) are not acceptable as a written report.**

12. **In addition to the pre-final evaluation done by the Supervisor and Examiner, the student must be prepared to appear for an online Viva (through WebEx) on the chosen date during April 2017 to present and defend the Dissertation before a panel of independent examiners. The final grade in Dissertation would be based on the Supervisor's evaluation as well as the independent evaluation by BITS Faculty.**

13. During the Viva each student will be required to make a technical presentation for about 20 minutes using Microsoft PowerPoint. The presentation will be followed by viva-voce for about 10 minutes. Students doing software development projects must be prepared to demonstrate their software product during their presentation.

14. The dates for the final viva-voce will be announced through the BITS WILP website by **March 29- April 02, 2017**. Only those students, whose **soft copy of Final Report & Pre-Final Evaluation Sheet and Presentation** duly signed and graded by the Supervisor and Additional Examiner is uploaded by the specified deadline, will be eligible to choose dates for the final viva-voce.

15. **Any student who fails to submit the Outline, Mid-Semester Evaluation or the Final Report by the stipulated deadline, and/or fails to appear for viva-voce might be reported as Required to Register Again (RRA) in Dissertation.**

16. Under the following conditions, students who appear for their final viva voce may also be reported RRA (Required to Register Again) after evaluation, under the following conditions:
    a. Student is unable to technically present/defend the work done.
    b. Technical knowledge/competence of the student is inadequate.
    c. The work report submitted is inadequate or incomplete.
    d. The work/report is found to be plagiarized.

17. **If any portion of the work/report is found to be plagiarized, the student will be liable to severe disciplinary action.**

Dean, WILPD

Guidelines for choosing topics for Dissertation

Each student should work independently on a chosen topic. Two or more students should not do any project jointly. **The chosen topic of work should be non-trivial, analytical, application-oriented and should involve substantial original research and/or development effort based on a specific theme. Any attempt at plagiarism or use of unfair means will result in severe disciplinary action.**

Students should choose only topics for which the work done can be **presented, demonstrated, and defended** before a panel of examiners. Students may note that in cases where no demonstration is perceived to be possible by the student / employer, due to technical or professional reasons, a letter on the official letterhead of the employer clearly stating this infeasibility, duly signed by the Project Manager of the student (or equivalent officer or higher) and to be uploaded by the students by the due date for upload the final report. **However, BITS-Pilani reserves the right to examine the validity of claims made and insist on a live demonstration in presence of its nominees.**

Mere configuration, installation, testing and routine maintenance, support or management of systems or equipments will not be considered adequate for a Dissertation. Trivial, Small projects which are commonly done as assignments in courses are not acceptable as Dissertation. Mere survey of literature/data collection would also not be acceptable as a Dissertation.

- Work of the organization towards Certification of Quality Management (like ISO, CMM) should not be included. This will be viewed as organization's effort.
- You routine work cannot be submitted as it is.
- The work undertaken by you should be clearly visible and should pertain to the work accomplished during the current semester.
- The work should not result in mere compilation of information pertaining to organization/project handled. It should be adequately described.

Broad Areas for Dissertation of MTech. (Software Systems)

1. Artificial Intelligence
2. Computer Graphics
3. Compiler Construction
4. Computer Networking
5. Database Systems and Applications
6. Data Warehousing and/or Data Mining
7. E-Business
8. Embedded Systems
9. Pervasive Computing
10. Internetworking Technologies
11. Multimedia Computing
12. Network Security
13. Microprocessor Based System Design
14. Operating Systems
15. Real Time Systems
16. Software Engineering & Management
17. Software Testing and Quality Assurance
18. Software Architectures
19. Wireless and Mobile Computing
20. Telecom Switching Systems and Networks
21. Data Structures and Algorithms Design
22. Computer Organization and Software Systems
23. Cloud Computing
24. Data Storage Techniques and Networks
25. Object Oriented Analysis & Design

<Dissertation Title>

BITS ZG628T: Dissertation

by

<Student's Name>

<Id No.>

Dissertation work carried out at

<Name of the Employing Organization, Location>

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE
PILANI (RAJASTHAN)

April 2017

<Dissertation Title>

BITS ZG628T: Dissertation

by

<Student's Name>

ID No.

Dissertation work carried out at

<Name of the Employing Organization, Location>

Submitted in partial fulfillment of M.Tech. Software Systems degree programme

Under the Supervision of
<Name and Designation of Supervisor,
Employing Organization, Location>

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE
PILANI (RAJASTHAN)

April, 2017

CERTIFICATE

This is to certify that the Dissertation entitled <Title of the Dissertation> and submitted by <Name of the student> having ID-No. <BITS Id Number of the Student> for the partial fulfillment of the requirements of M.Tech. <Name of the degree> degree of BITS, embodies the bonafide work done by him/her under my supervision.

_____

Signature of the Supervisor

Place : _____

Date : _____

_____

Name, Designation & Organization &Location

Sequence of items in the Report

The following sequence may be followed in the preparation of the Mid-Semester Progress Report and document the work done till the Mid-Semester submission date. Same Report will culminate into the Final Report.

1. Cover Page (On the **hardbound** cover)
2. Title Page (Inner Cover Page)
3. Certificate from the Supervisor
4. Abstract
5. Acknowledgements
6. (Detailed) Table of Contents (with page numbers).
7. List of Figures (with figure number, figure titles and page numbers)
8. List of Tables with table number, table title and page number.
9. Chapter 1: Introduction (Page No.1 should start with Chapter 1)
10. Chapter 2, 3, etc.
11. Summary
12. Conclusions and Recommendations (if any)
13. Directions for future work (if any)
14. Bibliography (if any) (Please refer to the sample format given below)
15. References (if any) ((Please refer to the sample format given below)
16. Appendices (if any)
17. Checklist for the items in the report

Note: Please do not include any header or footer in any page of the report. Only page numbers should be mentioned at the bottom center of each page. For guidelines regarding preparation of the report, please consult your textbook for the course on Technical Report Writing / Technical Communication.

Format for giving Bibliography or References

Bibliography or References can be included in the report according to the format given in the following examples. References should be cited properly inside the text of the report.

1. BOOK

Author. Title of Book. City of Publication: Publisher, Year.

One Author Example: Brinkley, Alan. The Unfinished Nation. New York: Knopf, 1993.
Two or More Authors Example: Rowe, Richard, and Larry Jeffus. The Essential Welder: Gas Metal Arc Welding Classroom Manual. Albany: Delmar, 2000.

2. SCHOLARLY JOURNAL ARTICLES

Author. "Title of Article." Title of Journal Volume number (Year): Page(s).

Example: Davis, William D., Thomas Cleary, Michelle Donnelly, and Samuel Hellerman. "Using Sensor Signals to Analyze Fires." Fire Technology 39 (2003): 295-308.

3. CONFERENCE PROCEEDINGS

Editor names(s). Title of publication/conference. Name of conference. Dates and place of conference. Place of publication, publisher, and date of publication.

Example: Vivian VL, editor. Child abuse and neglect: a medical community response. First AMA National Conference on Child Abuse and Neglect; 1984 Mar 30-31; Chicago. Chicago: American Medical Association; 1985.

4. DISSERTATION AND THESES

Author name. Full title of the report. Publication type. Location and name of institution. Date of publication.

Dissertation Example: Youssef NM. School adjustment of children with congenital heart disease [Dissertation]. Pittsburgh (PA): University of Pittsburgh; 1988.

Thesis Example: Devins GM. Helplessness, depression, and mood in end-stage renal disease [masters thesis]. Montreal, Quebec: McGill University;1981.

5. A Private Communication

Wonham W.m. (1982) Private Communication.

6. Format for Citation of References within the Report

Example of citing a journal paper listed in references, inside the text of the report: …….. These results have been presented by Kalman and Pucy [2] …….

Birla Institute of Technology & Science, Pilani

Work-Integrated Learning Programmes Division

Second Semester 2016-2017

BITS ZG628T: Dissertation

ABSTRACT

BITS ID No. : _____

NAME OF THE STUDENT : _____

EMAIL ADDRESS : _____

STUDENT'S EMPLOYING ORGANIZATION & LOCATION : _____

SUPERVISOR'S NAME : _____

SUPERVISOR'S EMPLOYING ORGANIZATION & LOCATION : _____

SUPERVISOR'S EMAIL ADDRESS: _____

DISSERTATION TITLE :_____

ABSTRACT : (Should be neatly word processed; should not exceed one page)

Broad Academic Area of Work: (Specify one from the areas listed in the guidelines)

Key words (Specify the technical keywords of the Project in alphabetical order)

_____ **Signature of the Student**

Name: _____

Date:

Place:

_____ **Signature of the Supervisor**

Name: _____

Date:

Place:

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI
WORK-INTEGRATED LEARNING PROGRAMMES DIVISION
Second Semester 2016-2017

BITS ZG628T: Dissertation EC-1: Dissertation Outline Evaluation Sheet

Upload Softcopy of Outline Report and Evaluation Sheet on on BITS LMS Taxila January 12, 2017

ID No. : _____

NAME OF THE STUDENT : _____

EMAIL ADDRESS : _____

STUDENT'S EMPLOYING ORGANIZATION & LOCATION : _____

SUPERVISOR'S NAME : _____

SUPERVISOR'S EMPLOYING ORGANIZATION & LOCATION : _____

PROPOSED DISSERTATION TITLE: _____

Student must enclose **the Dissertation Outline document** in proper format (as given on the next page) containing details of proposed topic of Dissertation Work, background, scope of work, objectives, plan of work, literature references and particulars of the Supervisor as well as one additional examiner in terms of Name, Designation, Qualification and contact information. The student's Mentor should either be the Supervisor or the Additional Examiner. **The Supervisor and Additional Examiner should verify and sign at the end of the Dissertation Outline document.**

DISSERTATION OUTLINE EVALUATION
(Please put a tick (✔) mark in the appropriate box)

EC No.	Component	Excellent	Good	Fair	Poor
1.	Dissertation Outline				

	Supervisor	Additional Examiner
Name		
Qualification		
Designation		
Employing Orgn and Location		
Phone No. (with STD Code)		
Email Address		
Signature		
Date		

Birla Institute of Technology & Science, Pilani
Work-Integrated Learning Programmes Division
Second Semester 2016-2017

BITS ZG628T : Dissertation Outline

ID No. : _____

NAME OF THE STUDENT : _____

EMAIL ADDRESS : _____

STUDENT'S EMPLOYING ORGANIZATION & LOCATION : _____

SUPERVISOR'S NAME : _____

SUPERVISOR'S EMPLOYING ORGANIZATION & LOCATION : _____

SUPERVISOR'S EMAIL ADDRESS : _____

DISSERTATION TITLE : _____

Please prepare the outline as a separate document with the following sections alongwith the above identification information.

1. Cover Page with ID No., Name, Course Number, Course Title and Dissertation Title, Broad Academic Area of Work:
2. Background (Relevance of the project to the current work environment in the employing organization)
3. Objectives
4. Scope of Work (to be done by the student independently)
5. Plan of Work (Work to be done during the semester)
6. Literature References
7. Particulars of the Supervisor and Examiner
8. Remarks of the Supervisor

Signature of Student	**Signature of Supervisor**	**Signature of Additional Examiner**
Name_____	**Name** _____	**Name** _____

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI
WORK-INTEGRATED LEARNING PROGRAMMES DIVISION
Second Semester 2016-2017

BITS ZG628T : Dissertation Mid-Semester Progress Evaluation Sheet

Upload Softcopy of Mid-Semester Progress Report and Mid-Semester Evaluation Sheet by ***February 27, 2017***

ID No. : _____

NAME OF THE STUDENT : _____

EMAIL ADDRESS : _____

SUPERVISOR'S NAME : _____

DISSERTATION TITLE : _____

Details of work done till date (with reference to Outline) : Attach a separate word processed document, giving brief details of work done.

Plan of work yet to be done : Attach a separate word processed document, specifying the milestones & deliverables.

EVALUATION

DISSERTATION PROGRESS EVALUATION *(Please put a tick (✔) mark in the appropriate box)*

EC No.	Component	Excellent	Good	Fair	Poor
1.	Dissertation Outline				
2.	Work Progress & Achievements				
3.	Initiative and Originality				
4.	Documentation & Expression				
5.	Research & Innovation				
6.	Relevance to the work Environment				

	Supervisor	Additional Examiner
Name		
Qualification		
Designation		
Employing Orgn and Location		
Phone No. (with STD Code)		
Email Address		
Signature		
Date		

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI
WORK-INTEGRATED LEARNING PROGRAMMES DIVISION
Second Semester 2016-2017

BITS ZG628T : Dissertation EC-3 Pre-Final Evaluation Sheet

Upload Softcopy of Final Dissertation Report, Pre-Final Evaluation Sheet, and Final Presentation by March 27, 2017

ID No. : _____

NAME OF THE STUDENT : _____

EMAIL ADDRESS : _____

NAME OF THE SUPERVISOR : _____

DISSERTATION TITLE : _____

Dissertation Final Evaluation *(Please put a tick (✔) mark in the appropriate box)*

S No.	Evaluation Component	Excellent	Good	Fair	Poor
1.	Final Dissertation Report				
2.	Final Seminar and Viva-Voce				

S.No.	Evaluation Criteria	Excellent	Good	Fair	Poor
1	Technical/Professional Competence				
2	Work Progress and Achievements				
3	Documentation and expression				
4	Initiative and Originality				
5	Research & Innovation				
6	Relevance to the work environment				

Please ENCIRCLE the Recommended Final Grade: Excellent / Good / Fair / Poor

Remarks of the Supervisor:

	Supervisor	Additional Examiner
Name		
Qualification		
Designation		
Employing Organization & Location		
Phone Number		
Mobile Number		
Email Address		
Signature		
Place & Date		

Checklist of items for the Final Dissertation Report

This checklist is to be attached as the last page of the report.

This checklist is to be duly completed, verified and signed by the student.

1.	**Is the final report neatly formatted with all the elements required for a technical Report?**	Yes / No
2.	Is the Cover page in proper format as given in Annexure A?	Yes / No
3.	Is the Title page (Inner cover page) in proper format?	Yes / No
4.	(a) Is the Certificate from the Supervisor in proper format? (b) Has it been signed by the Supervisor?	Yes / No Yes / No
5.	Is the Abstract included in the report properly written within one page? Have the technical keywords been specified properly?	Yes / No Yes / No
6.	Is the title of your report appropriate? **The title should be adequately descriptive, precise and must reflect scope of the actual work done.** Uncommon abbreviations / Acronyms should not be used in the title	Yes / No
7.	Have you included the List of abbreviations / Acronyms?	Yes / No
8.	Does the Report contain a summary of the literature survey?	Yes / No
9.	Does the Table of Contents include page numbers? (i). Are the Pages numbered properly? (Ch. 1 should start on Page # 1) (ii). Are the Figures numbered properly? (Figure Numbers and Figure Titles should be at the bottom of the figures) (iii). Are the Tables numbered properly? (Table Numbers and Table Titles should be at the top of the tables) (iv). Are the Captions for the Figures and Tables proper? (v). Are the Appendices numbered properly? Are their titles appropriate	Yes / No Yes / No Yes / No Yes / No Yes / No Yes / No
10.	Is the conclusion of the Report based on discussion of the work?	Yes / No
11.	Are References or Bibliography given at the end of the Report? Have the References been cited properly inside the text of the Report? Are all the references cited in the body of the report	Yes / No Yes / No Yes / No
12.	Is the report format and content according to the guidelines? The report should not be a mere printout of a Power Point Presentation, or a user manual. Source code of software need not be included in the report.	Yes / No

Declaration by Student:

I certify that I have properly verified all the items in this checklist and ensure that the report is in proper format as specified in the course handout.

Place: _____ **_____**

Signature of the Student

Date: _____ **Name: _____**

ID No.: _____

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI
WORK-INTEGRATED LEARNING PROGRAMMES DIVISION
Second Semester 2016-2017

BITS ZG628T : Dissertation Mid-Semester Progress Evaluation Sheet

Upload Softcopy of Mid-Semester Progress Report and Mid-Semester Evaluation Sheet by ***February 27, 2017***

ID No. : _____

NAME OF THE STUDENT : _____

EMAIL ADDRESS : _____

SUPERVISOR'S NAME : _____

DISSERTATION TITLE : _____

Details of work done till date (with reference to Outline) : Attach a separate word processed document, giving brief details of work done.

Plan of work yet to be done : Attach a separate word processed document, specifying the milestones & deliverables.

EVALUATION

DISSERTATION PROGRESS EVALUATION *(Please put a tick (✔) mark in the appropriate box)*

EC No.	Component	Excellent	Good	Fair	Poor
1.	Dissertation Outline				
2.	Work Progress & Achievements				
3.	Initiative and Originality				
4.	Documentation & Expression				
5.	Research & Innovation				
6.	Relevance to the work Environment				

	Supervisor	Additional Examiner
Name		
Qualification		
Designation		
Employing Orgn and Location		
Phone No. (with STD Code)		
Email Address		
Signature		
Date		

Abstract:

IO-MT (Internet of Medical Things) based medi-care system will take care of following use cases - Care for the pediatric and the aged and Personal Health management which focuses more on improving health care.
To build, deploy medical assistance system to help aged persons for improving quality of life without learning the time schedules of medicines.
System consists of micro-controller which takes inputs from sensors and according to rules it sends alert warning/voice messages.
It also displays output on LCD display to which medicines need to be consumed at particular time. If particular sensors value being monitored goes beyond normal range it will alert the patient according.
This will help patient to guide himself when he is alone at home nursery without missing course of medicines thereby taking appropriate actions by calling relatives in case of emergencies.

Work Completed:

1. **Configuration of Raspberry pi hardware/software**
   Enabling WI-Fi, accessing via terminal, vnc server etc

2. **File transfer activity with help of WINSCP and PUTty utility.**

3. **Developing trial socket and basic programs using Python3 on IDE (IDLE) on Raspberry Pi.**

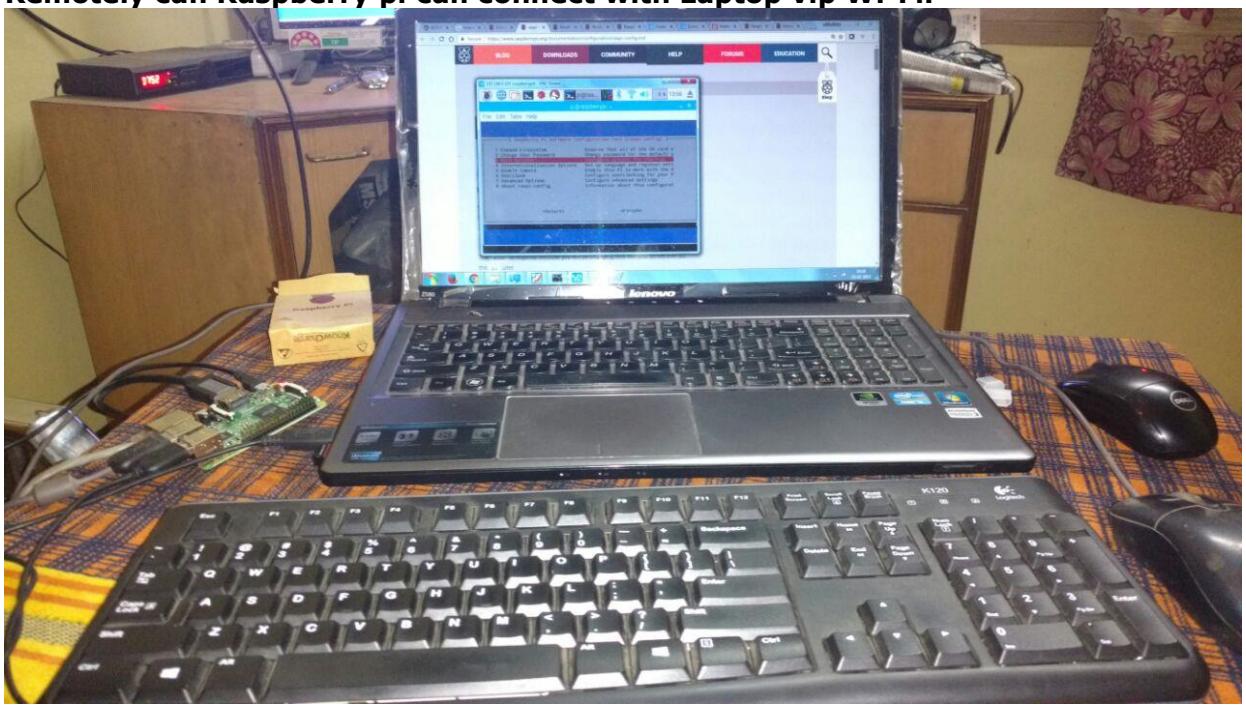
4. **Study of VNC server-**

   VNC is a graphical desktop sharing system that allows you to remotely control the desktop interface of one computer (running a VNC Server) from another computer or mobile device (running a VNC Viewer). VNC Viewer transmits the keyboard and either mouse or touch events to VNC Server, and receives updates to the screen in return.

   You will see the desktop of the Raspberry Pi inside a window on your computer or mobile device. You'll be able to control it as though you were working on the Raspberry Pi itself.

Enabled VCN server in configuration of pi.

Thus, every time HDMI cable and HDMI TV not needed for its configuration. Remotely can Raspberry pi can connect with Laptop vip Wi-Fi.



5. **Tkinter Library Study**

   Tkinter is a simple to use, cross-platform(Linux/Windows/OSx) GUI program – the only built-in GUI packaged with Python. It is designed on Tcl/Tk -a popular open-source GUI scripting language for a wide range of programming languages (c, C++, Perl, PHP, Ruby etc.).

   Tkinter uses the term 'root window" for a graphical window which accommodates all the widgets.

   In a Tkinter program you will almost always:

a. **Start by making a root window**
b. **Create and configure Widgets within the root window**
c. **Decide Placement of Widgets: with the command foo.pack(). We disucss this in detail later.**
d. **Create Event handling functions: that would respond to any GUI events (like the event "button click")**
e. **Run an event loop: to invoke event functions**

6. **Following program to display stored image written using Python Language in Jet Brains Pycharm IDE**

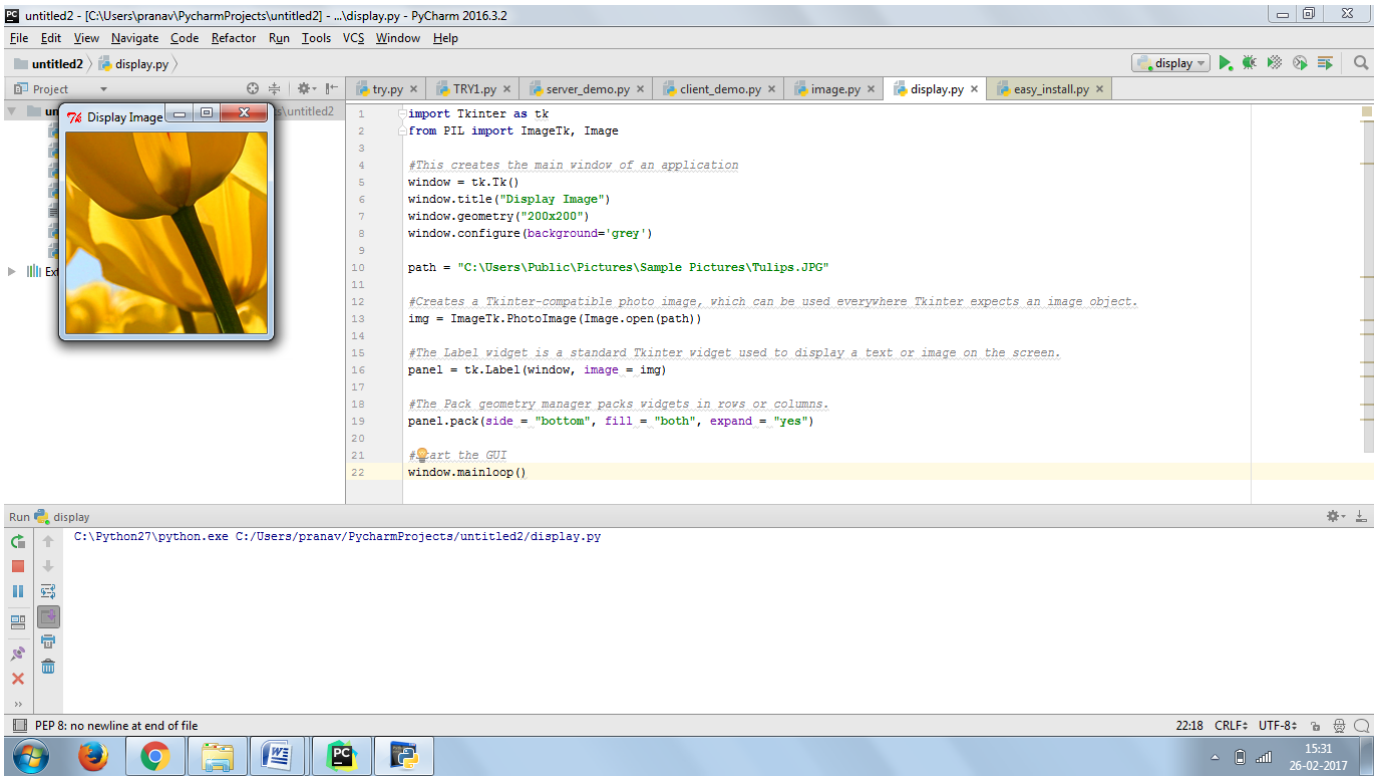


Fig:1 Image display using TKinter library

7. **Following program written in Python for Client and Server mode which depicts as sensor simulation software and software running on raspberry pi.**

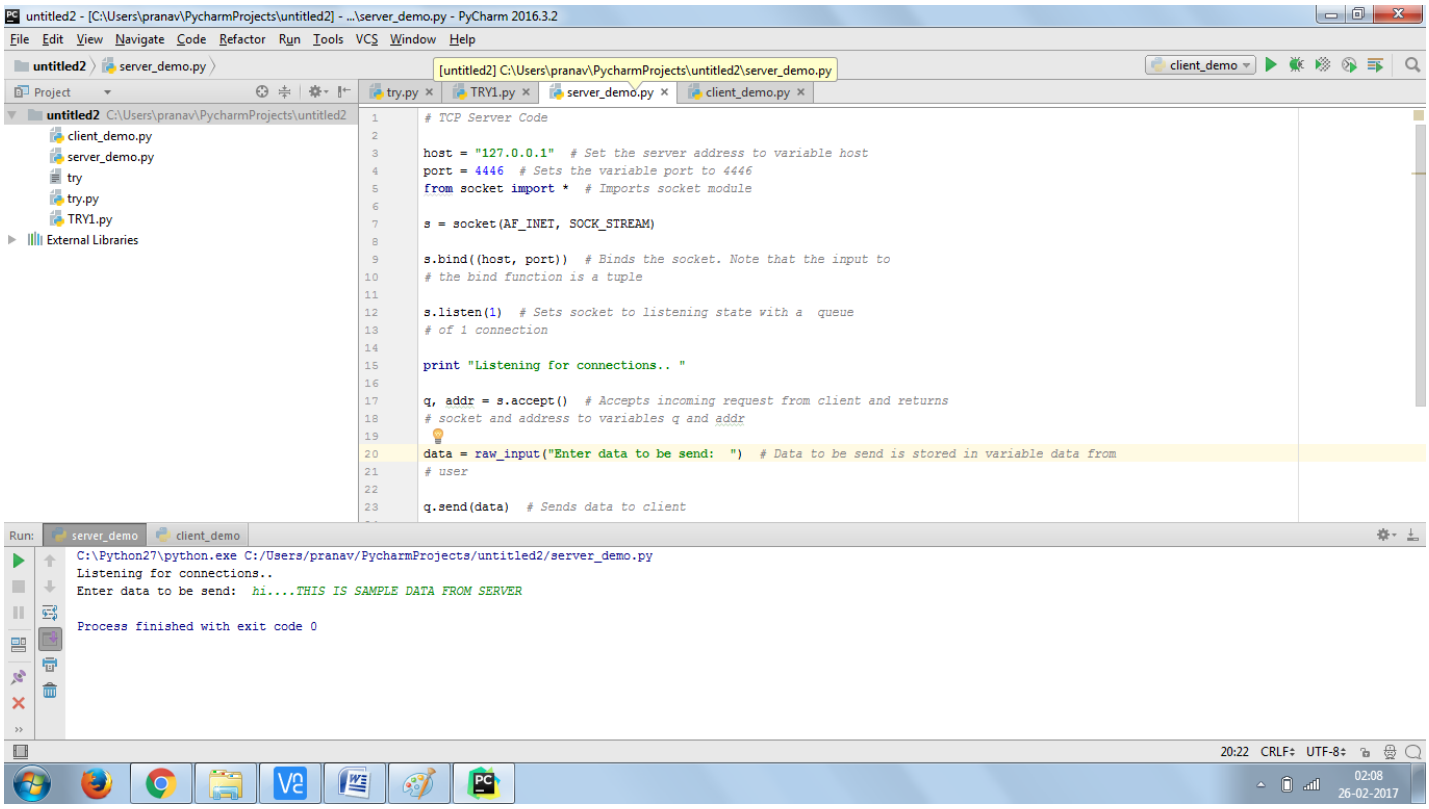


Fig-2 Server program sending data to client

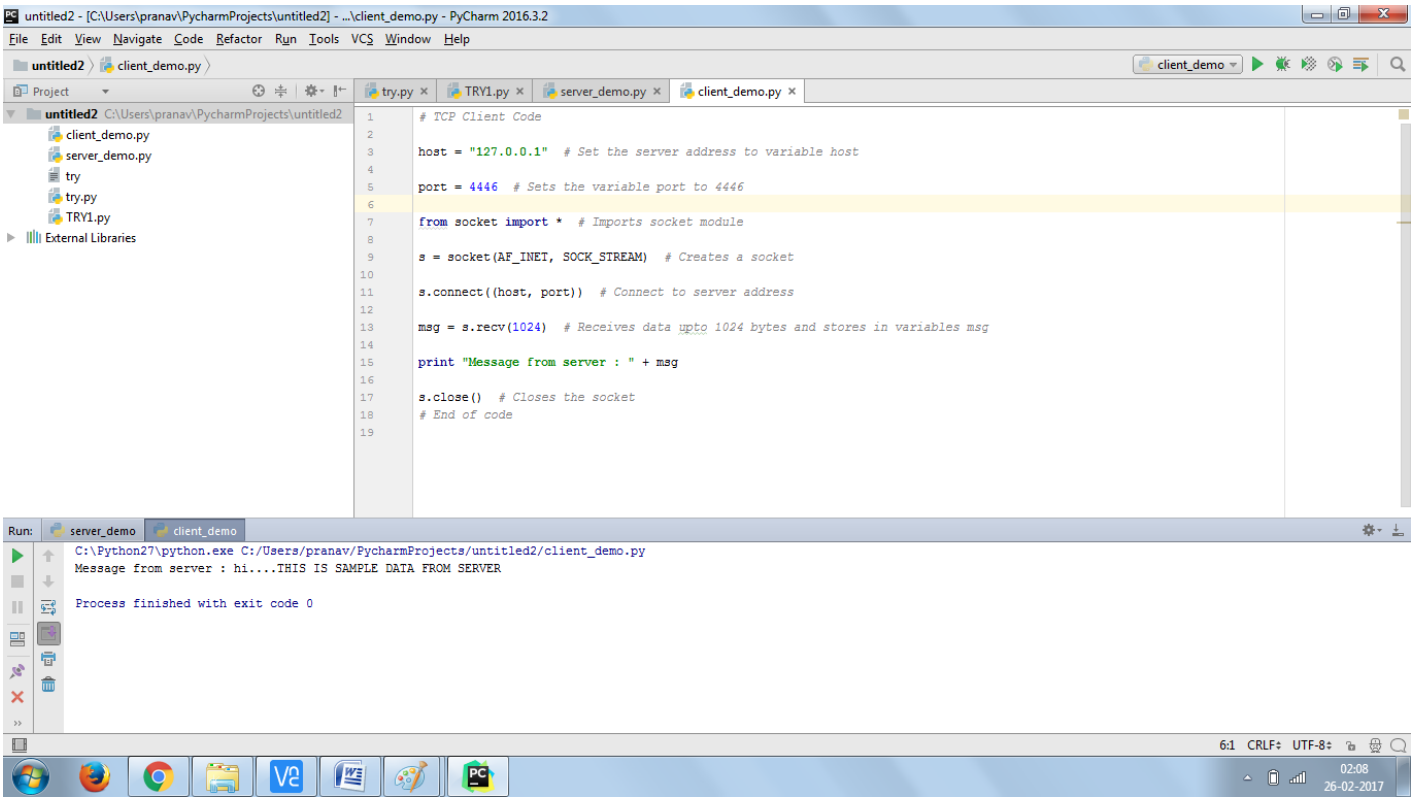


Fig3-Client Program acts as data receiver

8. **Demo programs to create a GUI using Python –**
   IDE used is Jet Brains Pycharm 2016.3.2

   a. **Usage of Button -** The Button widget is used to add buttons in a Python application. These buttons can display text or images that convey the purpose of the buttons. You can attach a function or a method to a button which is called automatically when you click the button.

      Note – Here on clicking a button , our user defined function has been called and to print "I-M-pressed" as shown below.

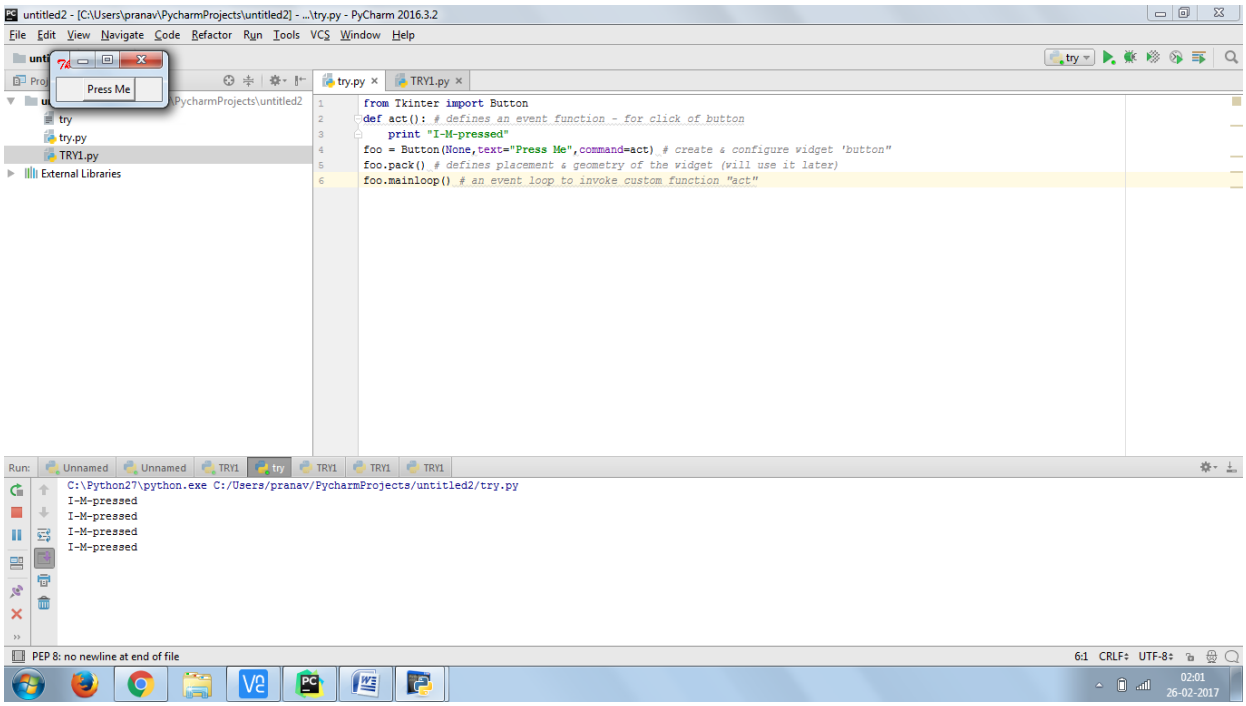


Fig – Button Widget and method function

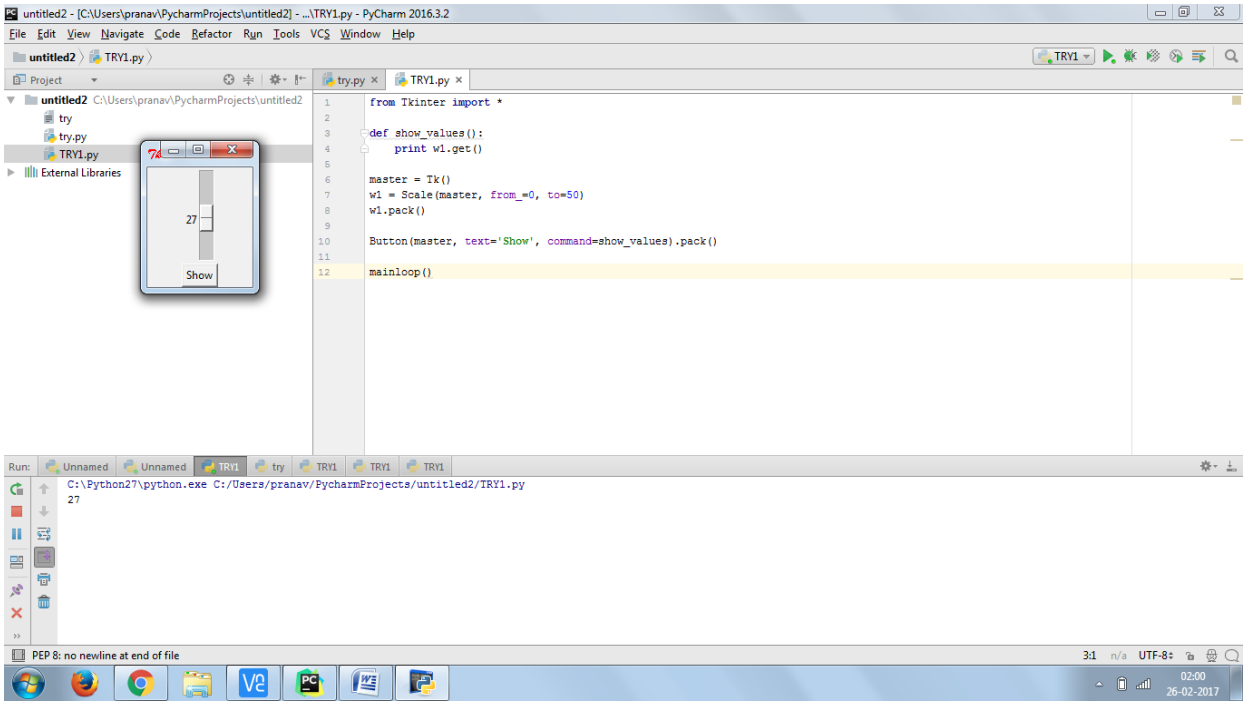


Fig – Scroll bar which indicates current value.

9. Plan of Work done and Work to be done:

Sr. No	Description of Work	Start Date	End Date	Work Completed
1	System Study: • Study on Rasberry Pi, stack for Ethernet • Study of creating GUI using Pthyon language.	12-01-2017	20-01-2017	YES
2	Analysis and Design: • Analysing major components and	22-01-2017	01-02-2017	YES

	designing communication between them.			
3	**Development** • **Development of customized application on micro-controller.** • **GUI setup.**	**02-02-2017**	**26-02-2017**	**(Full integrated application pending)** **Work in progress.** **(Basic / demo programs on raspberry pi and GUI widgets done)**
4	**System Integration** • **Integration of controller with GUI simulation software.** • **Connecting with LCD and with different sensors.**	**27-02-2017**	**13-03-2017**	**Pending**
5	**Testing** • **Testing the developed application which meets the desired criteria.** • **Modifications after review.**	**14-03-2017**	**21-03-2017**	**Pending**
6	**Documentation** • **Document the project.** • **Modifications after review by Supervisor and Examiner.**	**22-03-2017**	**25-03-2017**	**Pending**

References / Links -

1. Tutorials under : http://www.python-course.eu/tkinter_sliders.php
2. http://knowpapa.com/tkinter/
3. https://www.realvnc.com/docs/raspberry-pi.html
4. https://www.raspberrypi.org/documentation/remote-access/vnc/
5. Python coding for pi - https://www.raspberrypi.org/magpi/program-python/

Future Scope:

1. The e-Health Sensor Shield allows Raspberry Pi users to perform biometric and medical applications where body monitoring is needed by using 9 different sensors: pulse, oxygen in blood (SPO2), airflow (breathing), body temperature, electrocardiogram (ECG), glucometer, galvanic skin response (GSR - sweating), blood pressure (sphygmomanometer) and patient position (accelerometer).

   This information can be used to monitor in real time the state of a patient or to get sensitive data in order to be subsequently analysed for medical diagnosis. Biometric information gathered can be wirelessly sent using any of the 6 connectivity options available:
   Wi-Fi, 3G, GPRS, Bluetooth, 802.15.4 and ZigBee depending on the application.