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Atm machine investigation project

Computer science (The International School Bangalore)



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GEM INTERNATIONAL SENIOR SECONDARY SCHOOL

ACADEMIC YEAR: 2023-2024

PROJECT REPORT ON

"ATM MACHINE"

ROLL NO :

NAME : CHANDRA PRABHA V

CLASS : XII

SUBJECT : COMPUTER SCIENCE

SUBJECT CODE : 083

PROJECT GUIDE : MR.JEBA ALBIN RAJ .R, MCA, .B.Ed ,.

PGT (COMPUTER SCIENCE)

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GEM INTERNATIONAL SENIOR SECONDARY SCHOOL

CERTIFICATE

This is to certify that Cadet Roll No_____ has successfully completed the project Work entitled "ATM MACHINE " in the subject Computer Science (083) laid down in the regulations of CBSE for the purpose of Practical Examination in Class XII to be held in GEM International Senior Secondary School, PALLADAM on_____.

MR.R.JEBA ALBIN RAJ

PGT (Computer Science)

INTERNAL EXAMINER **PRINCIPAL** **EXTERNAL EXAMINER**

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ACKNOWLEDGEMENT

Apart from the efforts of me, the success of any project depends largely on the encouragement and guidelines of many others. I take this opportunity to express my gratitude to the people who have been instrumental in the successful completion of this project.

I express deep sense of gratitude to almighty God for giving me strength for the successful completion of the project.

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PROJECT ON ATM MACHINE MANAGEMENT SYSTEM

INTRODUCTION

The **ATM MACHINE SOFTWARE** works as same as normal ATM machine. It allows the user to create account, deposit money,withdraw money, transfer the money and check Balance.

OBJECTIVES OF THE PROJECT:

The objective of this project is to apply the programming knowledge into a real-world situation and expose how programming skills helps in developing a good software.

- An ability to use current techniques, skills, and tools necessary for computing practice.
- An ability to design, implement, and evaluate a computer-based system, process, components, or program to meet desired needs.
- An understanding of professional, ethical, legal, security and social issues, and responsibilities.
- An ability to communicate effectively with a range of audiences.
- An ability to analyse the local and global impact of computing on individuals, organizations and society.
- Recognition of the need for and an ability to engage in continuing professional development.
- An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modelling and design of computer-based systems in a way that demonstrates comprehension of the trade-off involved in design choices.

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PROPOSED SYSTEM

ATM is another type of banking where the most frequently transaction made is withdrawal. A user may withdraw as much money as he/she wants until his/her account holds a sum greater than his withdrawal amount. ATM is completely automated and there is no necessity of the ATM center being placed at the bank itself. It can be placed in the shopping malls, airports, railway stations etc. This ATM system can use any kind of interface. But it should be user friendly and not confusing. Help manuals should be provided in case any customer has problem working with the software. So to increase the speed of transaction atm project is proposed.

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SYSTEM DEVELOPMENT LIFE CYCLE (SDLC)



Systems development is the process of planning, analyzing, designing, maintaining, and implementing a new software application or program. It could include the internal development of customized systems, the creation of database systems, or the acquisition of third party developed software. Written standards and procedures must guide all information systems processing functions. The organization's management must define and implement standards and adopt an appropriate system development life cycle methodology governing the process of developing, acquiring, implementing, and maintaining computerized information systems and related technology.

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PHASES OF SYSTEM DEVELOPMENT LIFE CYCLE

INITIATION PHASE

The initiation phase is the first phase of the entire project management life cycle. The goal of this phase is to define the project, develop a business case for it, and get it approved. During this time, the project manager may do any of the following:

- Perform a feasibility study
- Create a project charter
- Identify key stakeholders
- Select project management tools

By the end of this phase, the project manager should have a high-level understanding of the project's purpose, goals, requirements, and risks.

CONCEPT DEVELOPMENT PHASE

The concept phase overlaps with the project planning. Activities conducted during the concept phase will eventually be integrated into the various planning documents and/or will drive the planning elements such as schedule and budget. It is a project management phase.

PLANNING PHASE

In the Planning Phase, the Project Manager works with the project team to create the technical design, task list, resource plan, communications plan, budget, and initial schedule for the project, and establishes the roles and responsibilities of the project team and its stakeholders.

REQUIREMENTS ANALYSIS PHASE

The purpose of the Analysis Phase is to thoroughly examine and evaluate the viable options identified in the Feasibility Phase and to arrive at an optimum high-level solution that will satisfy the client's requirements and the project's constraints.

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Our method consists of three stages:

- **change identification**
- **change analysis**
- **rework assessment**.

DESIGN PHASE

In the design phase, one or more designs are developed, with which the project result can apparently be achieved. Depending on the subject of the project, the products of the design phase can include dioramas, sketches, flow charts, site trees, HTML screen designs, prototypes, photo impressions and UML schemas. The project supervisors use these designs to choose the definitive design that will be produced in the project.

DEVELOPMENT PHASE

During the development phase, everything that will be needed to implement the project is arranged. Potential suppliers or subcontractors are brought in, a schedule is made, materials and tools are ordered, and instructions are given to the personnel and so forth. The development phase is complete when implementation is ready to start. All matters must be clear for the parties that will carry out the implementation.

INTEGRATION AND TEST PHASE

All software and hardware configuration item components have been constructed and successfully tested (Developed system has passed a Test Readiness Review). All integration plans are prepared. The Transition Plan for existing data and processes that will be reused is complete.

IMPLEMENTATION PHASE

The project takes shape during the implementation phase. This phase involves the construction of the actual project result. Programmers are occupied with encoding, designers

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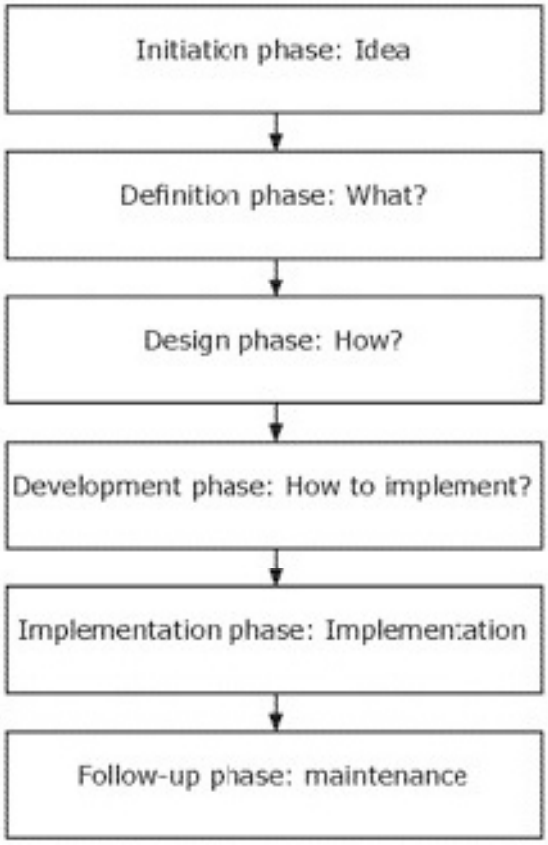
are involved in developing graphic material, contractors are building, the actual reorganization takes place. It is during this phase that the project becomes visible to outsiders, to whom it may appear that the project has just begun. The implementation phase is the doing phase, and it is important to maintain the momentum.

OPERATIONS AND MAINTENANCE PHASE

The purpose of the Operations and Maintenance Phase is **to ensure the information system is fully functional and performs optimally until the system reaches its end of life**.

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FLOW CHART FOR PHASES:



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PROGRAM

```
import getpass
import string
import os


# creatinga lists of users, their PINs and bank statements
users = ['chandra', 'maha', 'sudharshan',’dhushyanth’]
pins = ['1111', '2222', '3333',’4444’]
amounts = [1000, 200000, 300000,100000]
count = 0
# while loop checks existance of the enterd username
while True:
        user = input('\nENTER USER NAME: ')
        #print(user)
        user = user.lower()
        if user in users:
                if user == users[0]:
                        n = 0
                elif user == users[1]:
                        n = 1
                else:
                        n = 2
                break
        else:
                print('----------------')
                print('*****************')
                print('INVALID USERNAME')
```


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```
            print('*****************')
            print('----------------')


# comparing pin
while count < 3:
        print('------------------')
        print('******************')
        pin = str(input('PLEASE ENTER PIN: '))
        print('******************')
        print('------------------')
        if pin.isdigit():
            if user == users[0]:
                if pin == pins[0]:
                    break
                else:
                    count += 1
                    print('-----------')
                    print('***********')
                    print('INVALID PIN')
                    print('***********')
                    print('-----------')
                    print()


            if user == users[1]:
                if pin == pins[1]:
                    break
                else:
```


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```
                    count += 1
                    print('-----------')
                    print('***********')
                    print('INVALID PIN')
                    print('***********')
                    print('-----------')
                    print()

            if user == users[2]:
                if pin == pins[2]:
                    break
                else:
                    count += 1
                    print('-----------')
                    print('***********')
                    print('INVALID PIN')
                    print('***********')
                    print('-----------')
                    print()
    else:
            print('------------------------')
            print('*************************')
            print('PIN CONSISTS OF 4 DIGITS')
            print('*************************')
            print('------------------------')
            count += 1
```


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```
# in case of a valid pin- continuing, or exiting
if count == 3:
        print('-----------------------------------')
        print('***********************************')
        print('3 UNSUCCESFUL PIN ATTEMPTS, EXITING')
        print('!!!!!YOUR CARD HAS BEEN LOCKED!!!!!')
        print('***********************************')
        print('-----------------------------------')
        exit()


print('-------------------------')
print('*************************')
print('LOGIN SUCCESFUL, CONTINUE')
print('*************************')
print('-------------------------')
print()
print('--------------------------')
print('**************************')
print(str.capitalize(users[n]), 'welcome to ATM')
print('**************************')
print('----------HDFC ATM SYSTEM-----------')
# Main menu
while True:
        #os.system('clear')
        print('-------------------------------')
        print('*******************************')
```


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```
        response = input('SELECT FROM FOLLOWING OPTIONS: \nStatement__(S) \nWithdraw___(W) \nLodgement__(L)  \nChange PIN_(P) \nQuit_______(Q) \n: ').lower()

        print('******************************')

        print('------------------------------')

        valid_responses = ['s', 'w', 'l', 'p', 'q']

        response = response.lower()

        if response == 's':

                print('-------------------------------------------')

                print('*******************************************')

                print(str.capitalize(users[n]), 'YOU HAVE ', amounts[n],'RUPEES ON YOUR ACCOUNT.')

                print('*******************************************')

                print('-------------------------------------------')


        elif response == 'w':

                print('-------------------------------------------')

                print('*******************************************')

                cash_out = int(input('ENTER AMOUNT YOU WOULD LIKE TO WITHDRAW: '))

                print('*******************************************')

                print('-------------------------------------------')

                if cash_out%10 != 0:

                        print('-------------------------------------------------')


        print('*************************************************')

                        print('AMOUNT YOU WANT TO WITHDRAW MUST TO MATCH 10 RUPEES NOTES')


        print('*************************************************')
```


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```
                print('-----------------------------------------------------')
        elif cash_out > amounts[n]:
                print('----------------------------')
                print('*****************************')
                print('YOU HAVE INSUFFICIENT BALANCE')
                print('*****************************')
                print('----------------------------')
        else:
                amounts[n] = amounts[n] - cash_out
                print('---------------------------------')
                print('*********************************')
                print('YOUR NEW BALANCE IS: ', amounts[n], 'RUPEES')
                print('*********************************')
                print('---------------------------------')

elif response == 'l':
        print()
        print('-------------------------------------------')
        print('*******************************************')
        cash_in = int(input('ENTER AMOUNT YOU WANT TO LODGE: '))
        print('*******************************************')
        print('-------------------------------------------')
        print()
        if cash_in%10 != 0:
                print('-----------------------------------------------')

print('*************************************************')
```


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```
                print('AMOUNT YOU WANT TO LODGE MUST TO MATCH 10 RUPEES NOTES')

        print('**************************************************')
                print('--------------------------------------------------')
            else:
                amounts[n] = amounts[n] + cash_in
                print('----------------------------------------')
                print('****************************************')
                print('YOUR NEW BALANCE IS: ', amounts[n], 'RUPEES')
                print('****************************************')
                print('----------------------------------------')
        elif response == 'p':
            print('-----------------------------')
            print('*****************************')
            new_pin = str(input('ENTER A NEW PIN: '))
            print('*****************************')
            print('-----------------------------')
            if new_pin.isdigit() and new_pin != pins[n] and len(new_pin) == 4:
                print('------------------')
                print('******************')
                new_ppin = str(input('CONFIRM NEW PIN: '))
                print('******************')
                print('------------------')
                if new_ppin != new_pin:
                    print('------------')
                    print('************')
                    print('PIN MISMATCH')
```


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```
                print('**********')
                print('----------')
            else:
                pins[n] = new_pin
                print('NEW PIN SAVED')
        else:
            print('-----------------------------------')
            print('***********************************')
            print('   NEW PIN MUST CONSIST OF 4 DIGITS \nAND MUST BE DIFFERENT TO PREVIOUS PIN')
            print('***********************************')
            print('-----------------------------------')
    elif response == 'q':
        exit()
    else:
        print('----------------')
        print('****************')
        print('RESPONSE NOT VALID')
        print('****************')
        print('----------------')
```


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OUTPUT

ENTER USER NAME: chandra

****

PLEASE ENTER PIN: 1111

****

****

LOGIN SUCCESFUL, CONTINUE

****

****

Chandra welcome to ATM

****

----------HDFC ATM SYSTEM----------

****

SELECT FROM FOLLOWING OPTIONS:

Statement__(S)

Withdraw___(W)

Lodgement__(L)

Change PIN_(P)

Quit_____(Q)

: s

****

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****

Chandra YOU HAVE 1000 RUPEES ON YOUR ACCOUNT.

****

****

SELECT FROM FOLLOWING OPTIONS:

Statement__(S)

Withdraw___(W)

Lodgement__(L)

Change PIN_(P)

Quit_____(Q)

: w

****

****

ENTER AMOUNT YOU WOULD LIKE TO WITHDRAW: 100

****

****

YOUR NEW BALANCE IS: 900 RUPEES

****

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****

SELECT FROM FOLLOWING OPTIONS:

Statement__(S)

Withdraw___(W)

Lodgement__(L)

Change PIN_(P)

Quit_____(Q)

: l

****

****

ENTER AMOUNT YOU WANT TO LODGE: 100

****

****

YOUR NEW BALANCE IS: 1000 RUPEES

****

****

SELECT FROM FOLLOWING OPTIONS:

Statement__(S)

Withdraw___(W)

Lodgement__(L)

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Change PIN_(P)

Quit_____(Q)

: p

****

****

ENTER A NEW PIN: 1212

****

****

CONFIRM NEW PIN: 1212

****

NEW PIN SAVED

****

SELECT FROM FOLLOWING OPTIONS:

Statement__(S)

Withdraw___(W)

Lodgement__(L)

Change PIN_(P)

Quit_____(Q)

: q

****

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TESTING

Testing is **the process of evaluating a system or its component(s) with the intent to find whether it satisfies the specified requirements or not**. In simple words, testing is executing a system in order to identify any gaps, errors, or missing requirements in contrary to the actual requirements.

TESTING METHODS

Software testing methods are traditionally divided into black box testing and white box testing. These two approaches are used to describe the point of view that a test engineer takes when designing test cases.

BLACK BOX TESTING

Black box testing **assesses a system solely from the outside, without the operator or tester knowing what is happening within the system to generate responses to test actions**. A black box refers to a system whose behavior has to be observed entirely by inputs and outputs.



SPECIFICATION-BASED TESTING

Specification-based testing technique is also known as 'black-box' or input/output driven testing techniques because they **view the software as a black-box with inputs and outputs**. The testers have no knowledge of how the system or component is structured inside the box.

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Advantages of Black Box Testing

- Efficient when used on large systems.
- Since the tester and developer are independent of each other, testing is balanced and unprejudiced.
- Tester can be non-technical.
- There is no need for the tester to have detailed functional knowledge of system.
- Tests will be done from an end user's point of view, because the end user should accept the system. (This testing technique is sometimes also called Acceptance testing.)
- Testing helps to identify vagueness and contradictions in functional specifications.
- Test cases can be designed as soon as the functional specifications are complete.

Disadvantages of Black Box Testing

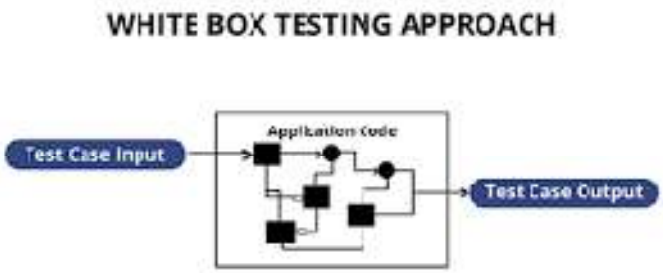
- Test cases are challenging to design without having clear functional specifications.
- It is difficult to identify tricky inputs if the test cases are not developed based on specifications.
- It is difficult to identify all possible inputs in limited testing time. As a result, writing test cases may be slow and difficult.
- There are chances of having unidentified paths during the testing process.
- There is a high probability of repeating tests already performed by the programmer.

WHITE BOX TESTING

White box testing is **an approach that allows testers to inspect and verify the inner workings of a software system**—its code, infrastructure, and integrations with external systems.

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Types of white box testing: -

1. Path Testing

Path Testing is a white-box testing approach based on a program's control structure.

2. Loop Testing

Loop Testing is concerned with determining the loop validity of these algorithms. The goal of this testing is to uncover any vulnerabilities that may exist in any particular loop.

3. Conditional Testing

In this type of testing, the logical conditions for every value are checked, whether it is true or false. This means that both the if and else conditions are verified, in case of an IF-ELSE conditional statement.

4. Unit Testing

A unit test is a method of testing a unit, which is the smallest piece of code in a system that can be logically separated. Unit testing ensures that each component performs as intended.

5. Mutation Testing

Mutation testing is a type of testing based on alterations or mutations. Minute modifications are made to the source code to see if the provided test cases can discover bugs in the code.

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6. Integration Testing

Integration testing is performed to check that modules/components operate as intended when combined, i.e., to ensure that modules that performed fine independently do not have difficulties when merged.

7. Penetration Testing

White box penetration testing, also known as crystal or oblique box pen testing, provides the tester with complete network and system data, including network maps and passwords. This saves time and lowers the overall cost of an engagement

8. Test Performance of the Program

An application might be slow due to a number of factors and it is not possible for a developer or tester to go through each line of code to detect a bug and verify it. Tools like Rational Quantify are used to come over this issue.

Advantages of white box testing

- Thoroughness
- Automation
- Time
- Optimization
- introspections.

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Disadvantages of white box testing

- cost
- rapidly changing code
- missed cases.

DIFFERENCE BETWEEN WHITE BOX TESTING AND GREY BOX TESTING

Black Box Testing	White Box Testing
1. Black box testing techniques are also called functional testing techniques.	1. White box testing techniques are also called structural testing techniques.
2Black Box Testing is a software testing method in which the internal structure/ design/ implementation of the item being tested is NOT known to the tester	2. White Box Testing is a software testing method in which the internal structure/ design/ implementation of the item being tested is known to the tester.
3. It is mainly applicable to higher levels of testing such as Acceptance Testing and System Testing	3. Mainly applicable to lower levels of testing such as Unit Testing and Integration Testing
4. Black box testing is generally done by Software Testers	4. White box testing is generally done by Software Developers
5. Programming knowledge is not required	5. Programming knowledge is required
6. Implementation knowledge is not required.	6. Implementation knowledge is required

CODE COMPLETENESS EVALUATION

White box testing methods can also be used to evaluate the completeness of a test suite that was created with black box testing methods. This allows the software team to examine parts of a system that are rarely tested and ensures that the most important function points have been tested.

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Two common forms of code coverage are*:*

- Function Coverage: Which reports on functions executed .
- Statement Coverage: Which reports on the number of lines executed to complete the test.

They both return coverage metric, measured as a percentage.

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HARWARE AND SOFTWARE REQUIREMENTS

HARDWARE REQUIREMENTS:

I.OPERATING SYSTEM	:	WINDOWS 7 AND ABOVE
II. PROCESSOR	:	PENTIUM(ANY) OR BETTER
III. RAM	:	1GB+

SOFTWARE REQUIREMENTS:

I. Windows OS

II. Python

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