ATM MODULE FOR BLIND PEOPLE WITH BRAILLE KEYPAD

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Abstract : This paper proposes design of a module that provides Braille facility and audible instructions to access an Automatic Teller Machine (ATM) so that a blind person will be empowered to access the ATM machine independently. In this project implementation of a ATM module is completed by using voice command and face detection. User can select their respective demand through voice command. After inserting the RFID card, camera captures the user's photo and store into the database. The blind people can even choose whether to check balance or to withdraw cash by voice command using Braille supported keypad. Normal person can select the processes is same as that of existing ATM.

Keywords **- ATM module, Braille keypad, RFID card, and Audible instruction set.**

I. INTRODUCTION

The blind people have problem for money transaction. Since ATMs lack Braille systems keypad support, the blind person finds it difficult of keying in PIN numbers. It is necessary to help the blind people for access to banking services. Since many of the blind people usually are not comfortable with internet or mobile banking. They prefer an assistant who is a normal person to help them complete their banking activity. They tell their PIN to assistant who can complete the transactions for them. The banking sector should work towards improving accessibility to banking services for blind person. There is a need to develop blind friendly ATMs that can be used effectively by the blinds without the assistance of normal people who may take advantage of their visually challenged status. It is an essential to provide Braille facility to blind customers. The module provides information of procedure to the blind people. A blind person makes his choice using the Braille keyboard or types his ATM personal identification number (PIN). He will use the customer friendly audio instruction set through headphones to support the banking transactions.

II. METHODOLOGY

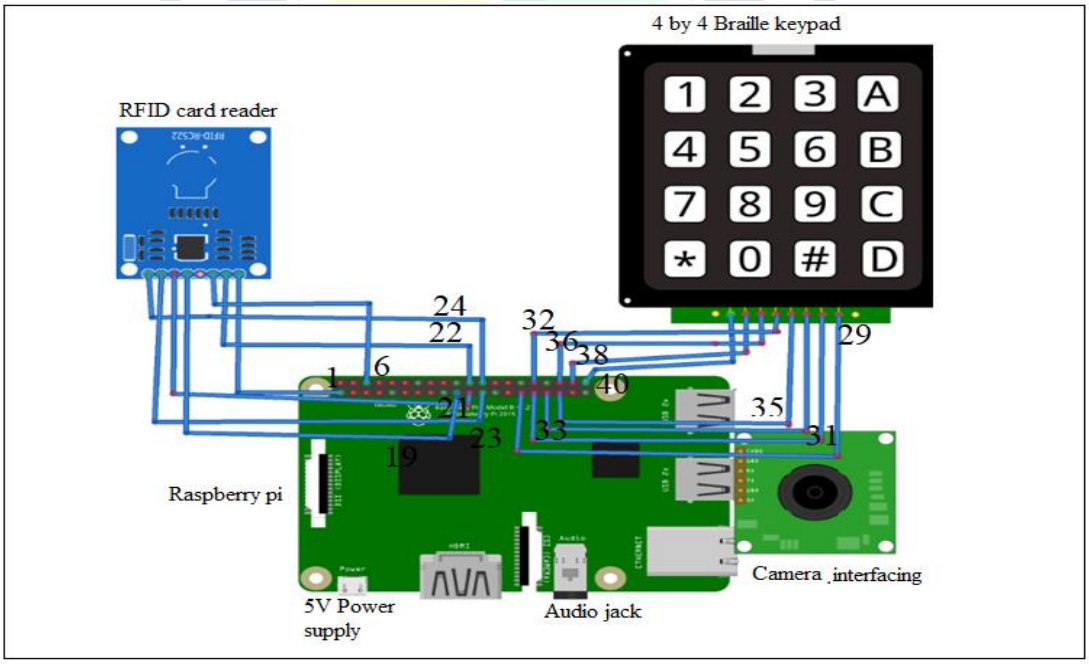


Figure 1. Circuit diagram of Braille supported ATM module to help blind people

In above block diagram raspberry pi is main heart of this system. It acts as a host processer.5V power supply is given to the raspberry pi. Raspberry pi is having in built camera port. Using this port camera is mounted. The stepwise procedure is explained as follows.

2.1 Insert the RFID Card and Remove It

The RFID card reader is connected to the raspberry pi. When blind person enters in the ATM room then listens the audio command " please insert the ATM card" through headphones. Then user can insert the RFID Card as a ATM card.

2.2 Read the RFID Card and Capture the User's Photo

RFID card reader contains crystal oscillator. When RFID card is inserted in it's slot card reader converts electromagnetic signal into the electrical signal and reads the RFID number as a ATM number. When ATM number is read then camera captures the user's photo and this captured photo is mailed to the bank's server. This system is connected to the raspberry pi which acts as a host processor between ATM server and bank's server. Raspberry pi gives user's detail information to the bank's server.

2.3 If Authentication is Completed Then Enter the PIN By Using Braille Keypad

When authentication of user is completed then user listens the audio instruction "please enter your PIN number". User can give the PIN by using Braille keypad. Each number in PIN pressed by user is audible to him/her by using headphones. This Pin is given to the raspberry pi. It checks whether the number is matched or not. If pin is not matched then user hears the command " please enter your correct PIN".

2.4 If PIN is Matched Then Listen The Audio Instruction Set and Select The Process

When PIN is matched then user can choose any option by listening to the audio instruction set of processes.

2.5 Press "1" to Withdraw Cash

User can press "1" for cash withdrawal. Then enter the amount. The user listens a message about how much amount is withdrawn. Then user listens the instruction "collect the cash " . Then the user has to collect the cash. If entered amount is greater than account balance then there is a voice command "you have insufficient balance please enter the valid amount".

2.6 Press "2" to Check Account Balance

If user wants to check the account balance then user has to press "2" and listen his/her current balance by using audio instruction.

2.7 Press "3" to Print Ledger

If user wants the account statement then user has to press "3" and take the print of account statement.

2.8Press "4" to Change the PIN

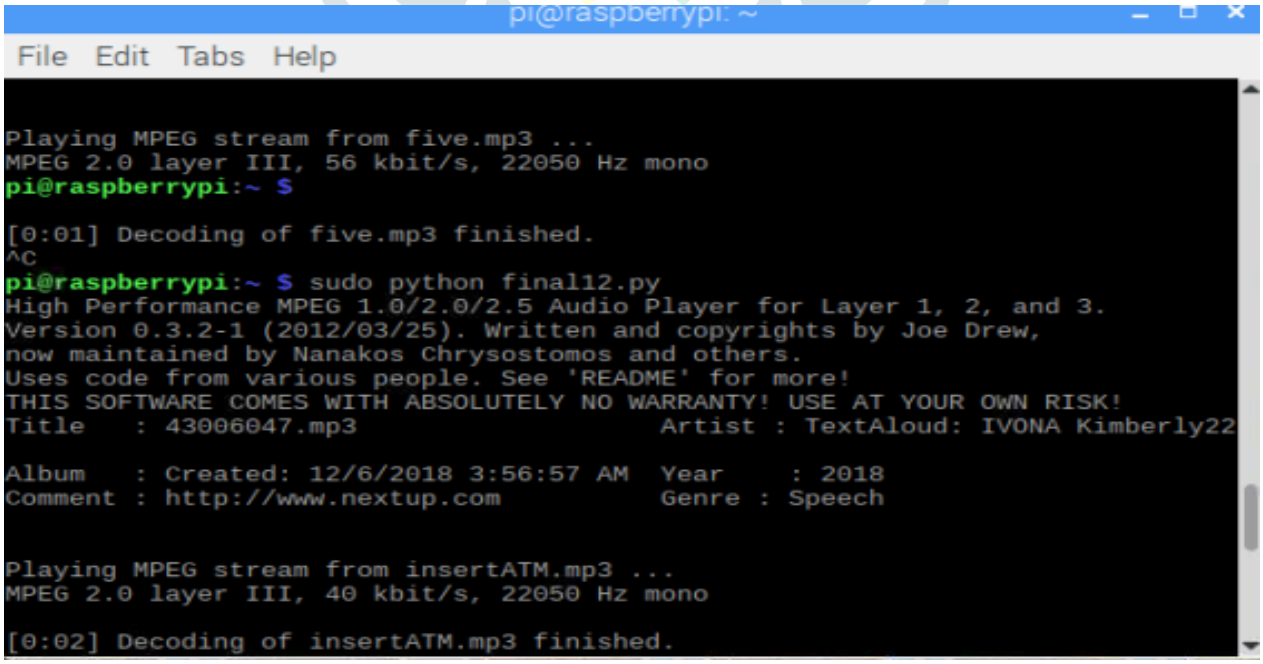
If user wants to change the PIN then user has to press "4" . Then first user enters the old PIN. It is given to the raspberry pi. The raspberry pi is connected to the bank's server and bank's server checks if it is correct or not. If it is incorrect then user listens "please enter the correct pin". If old PIN is matched then user listens "enter the new PIN".

2.9To Exit Press "Cancel"

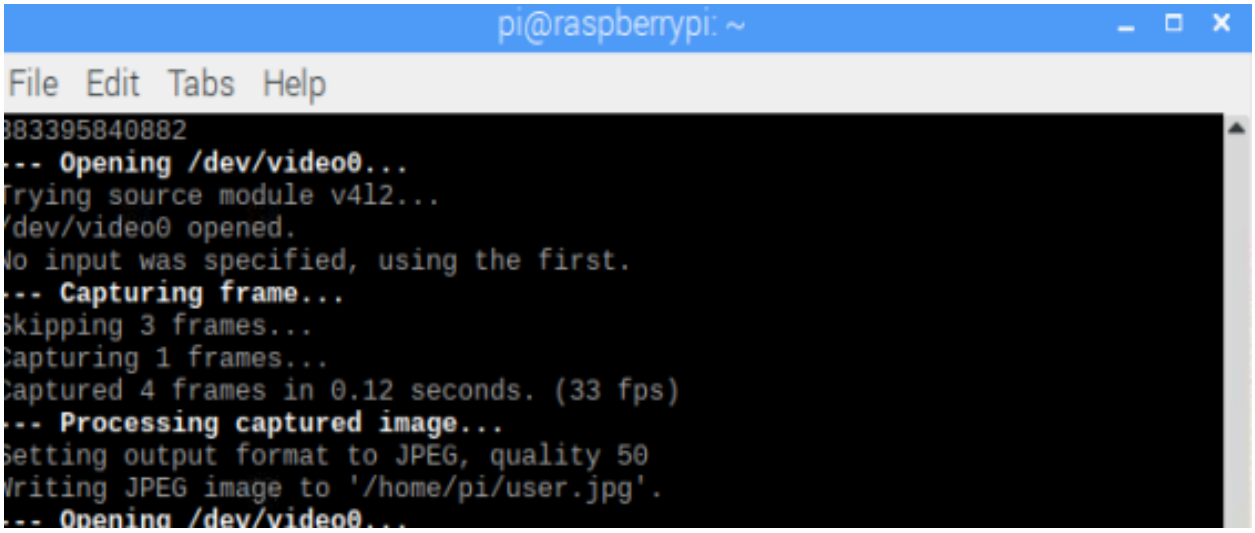
If user wants to exit the process then user has to press the "cancel" button. User listens "for another transaction processes enter the PIN and select the new transaction process".
All these processes are controlled by raspberry pi.

III. RESULTS

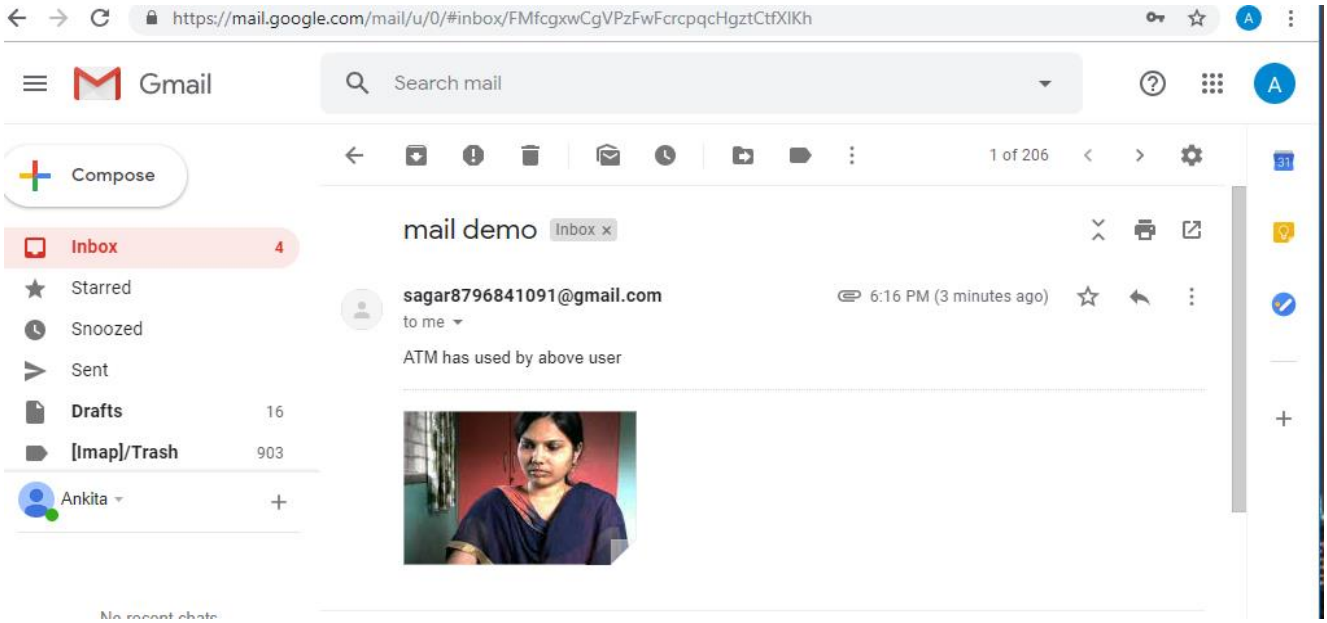
3.1 Insert the RFID Card



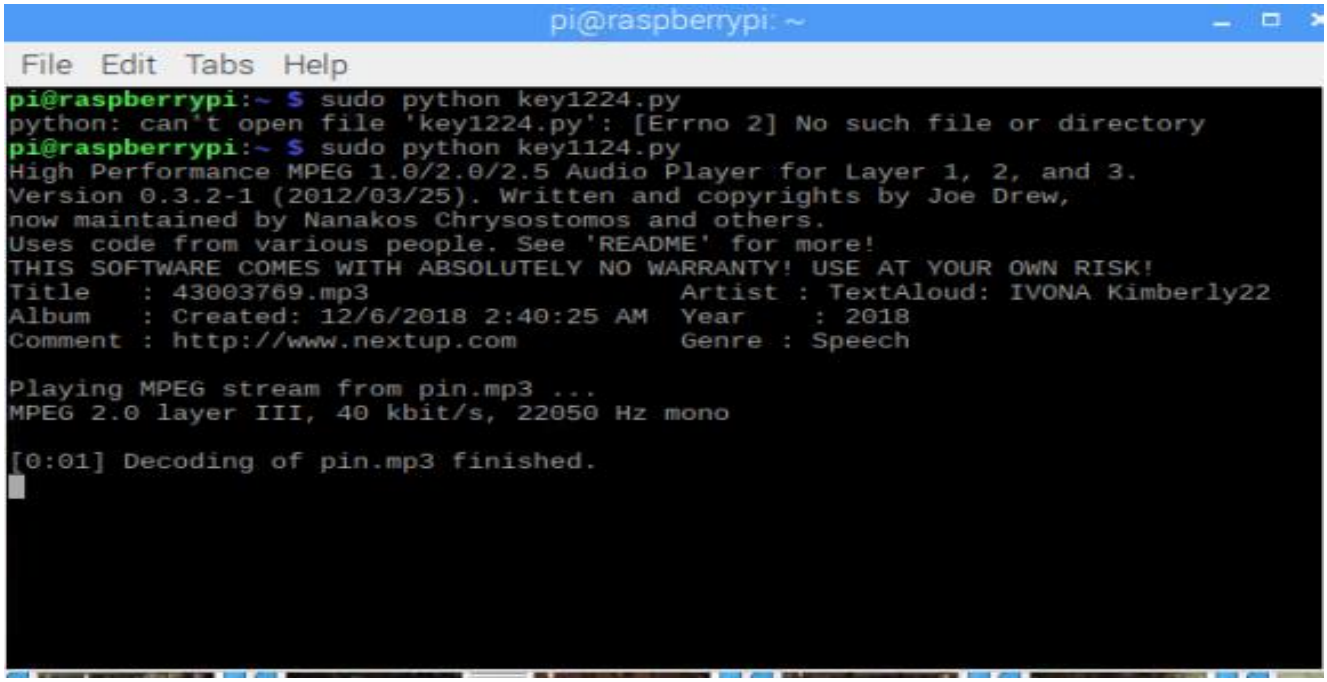
3.2 Read the RFID Number and Capture the User's Photo



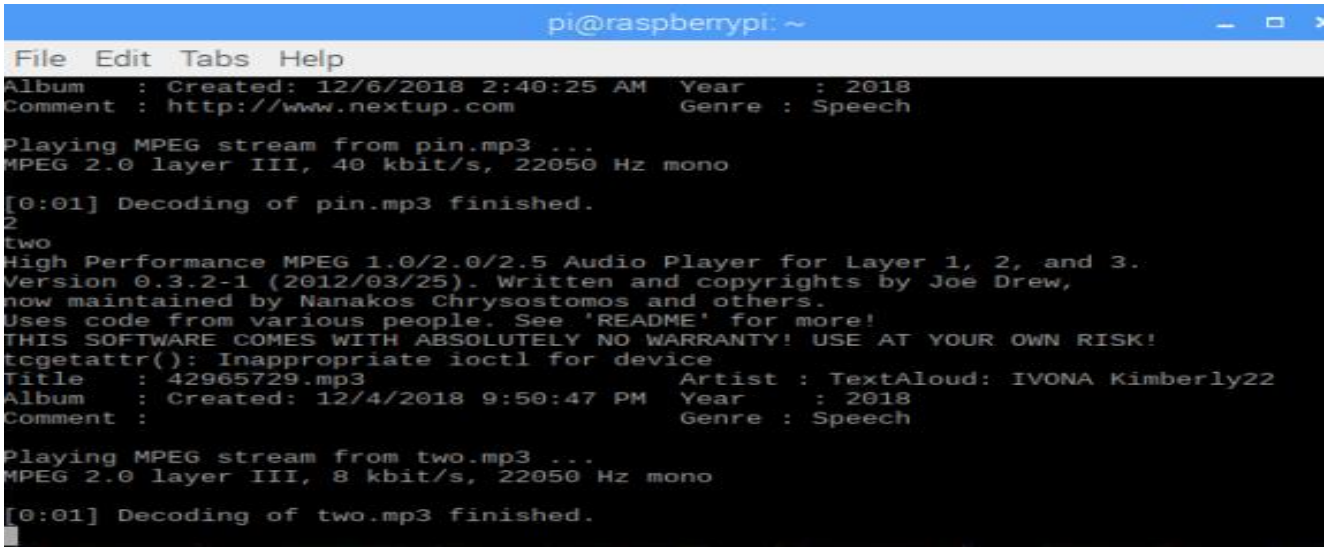
3.3 Mail the Captured Photo to Bank Server

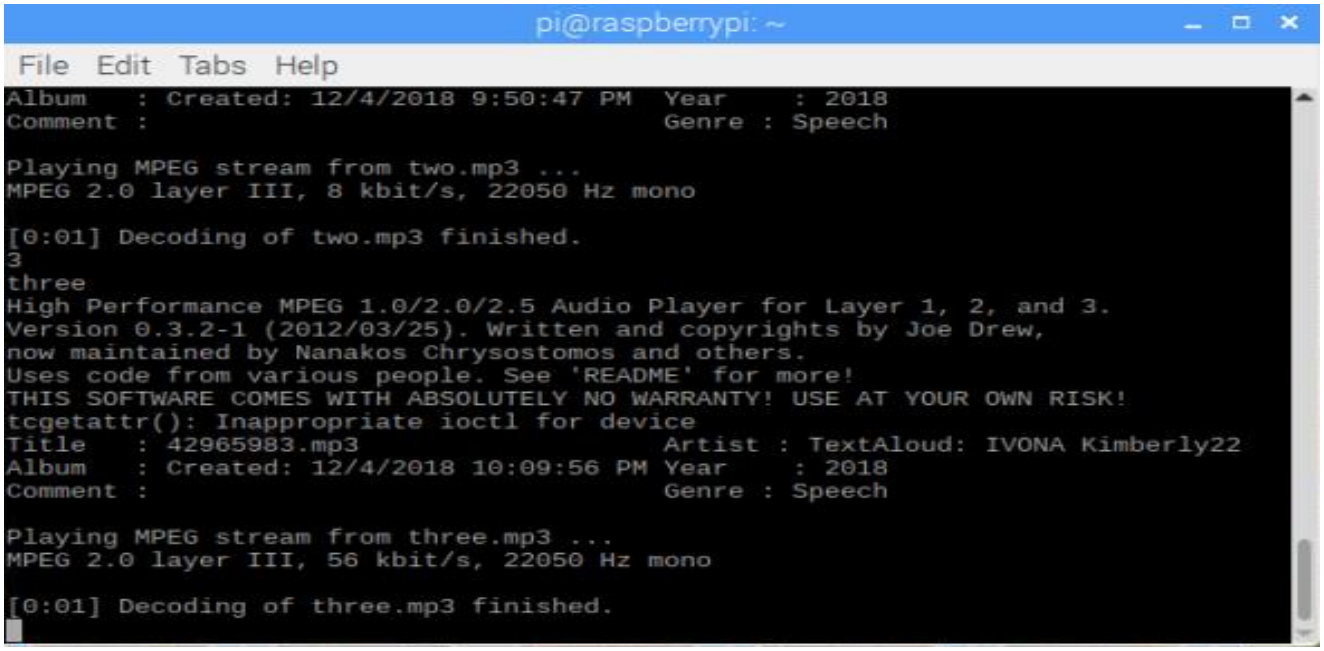


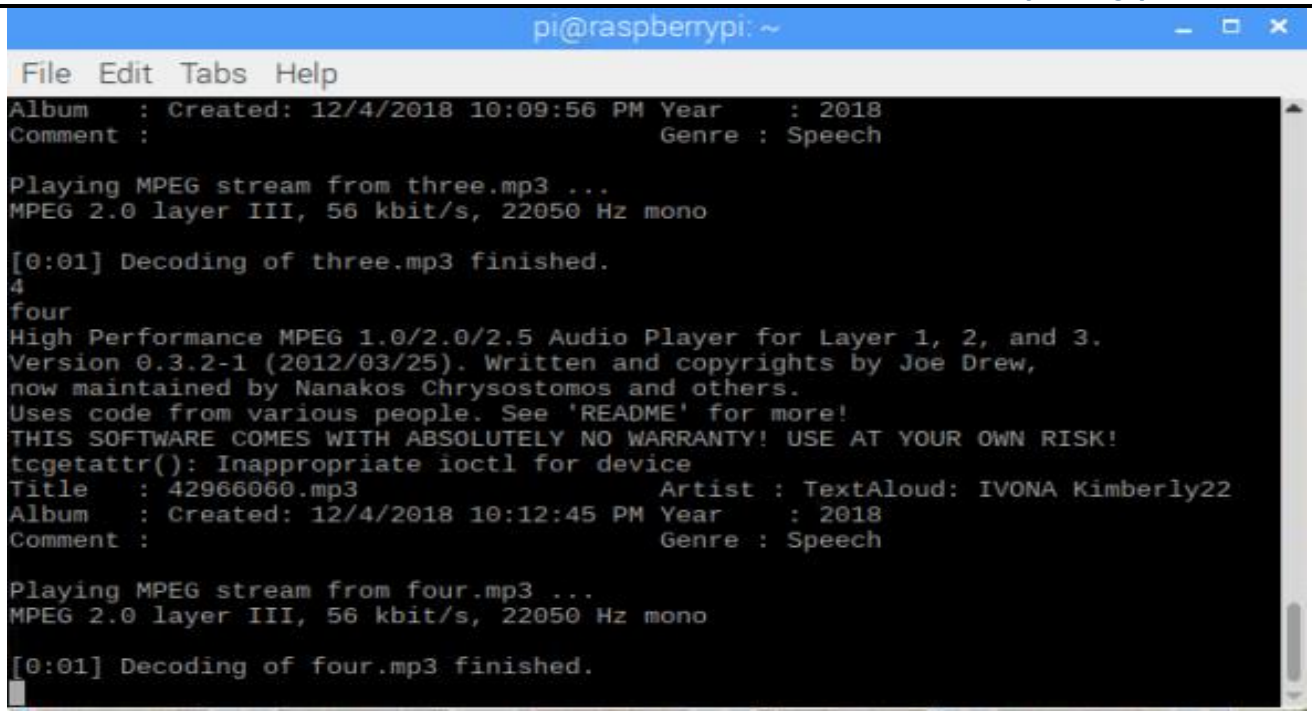
3.4 If Authentication is completed then Enter the PIN

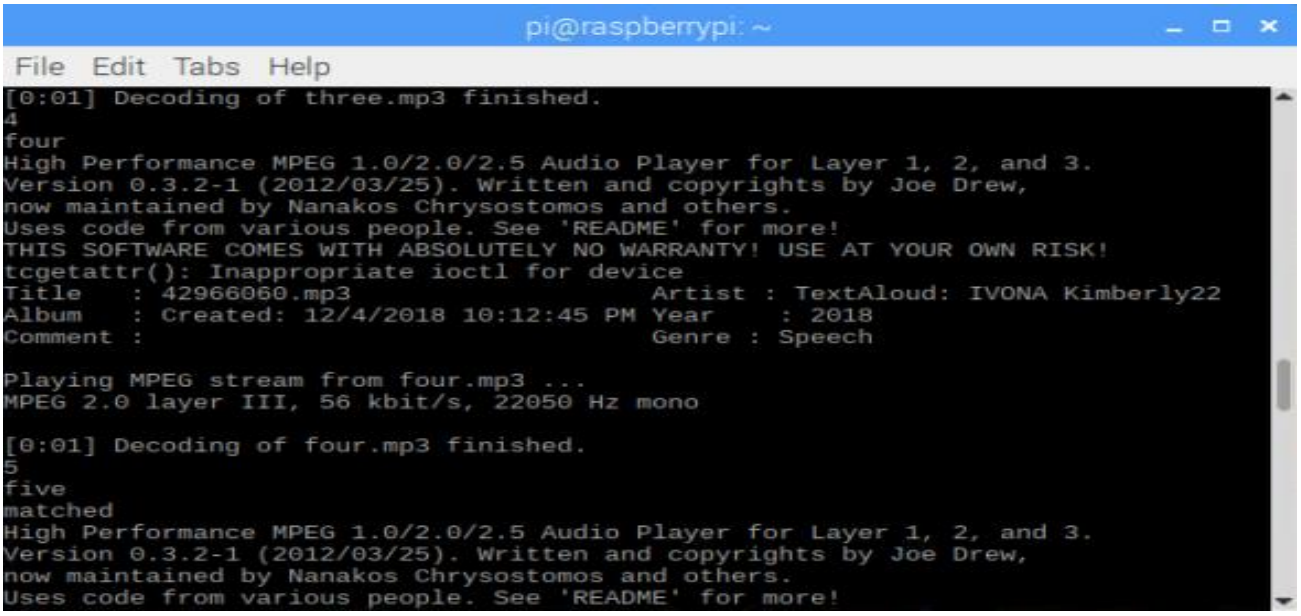


3.5 Enter The PIN

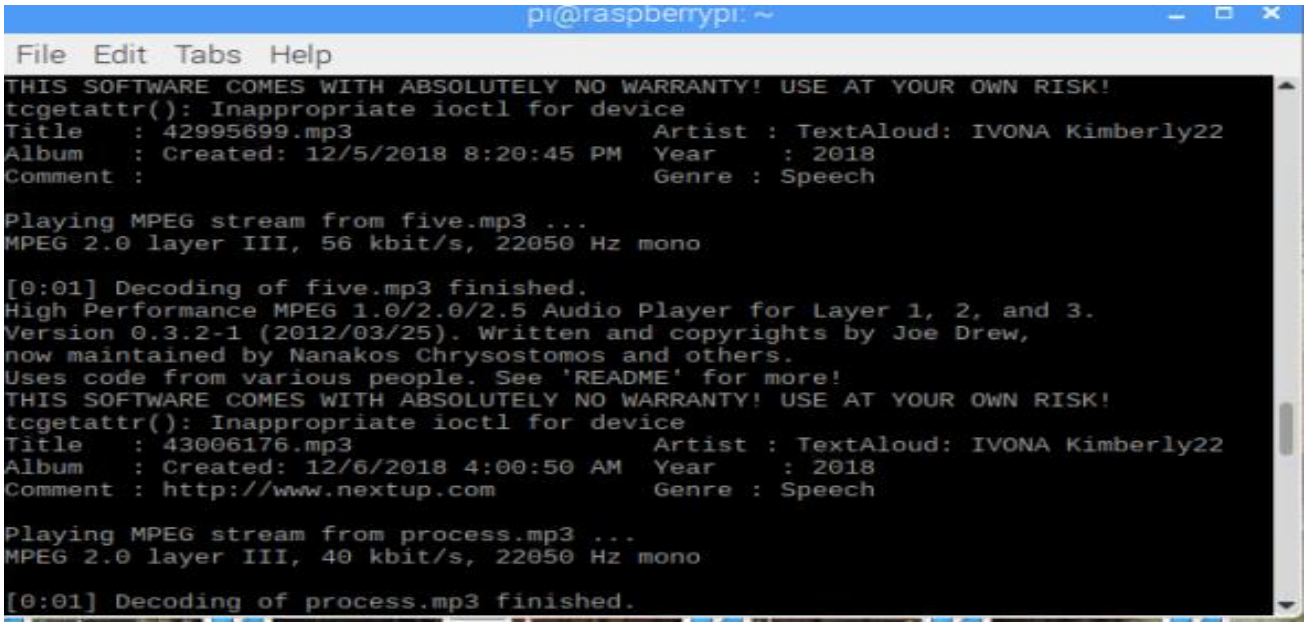




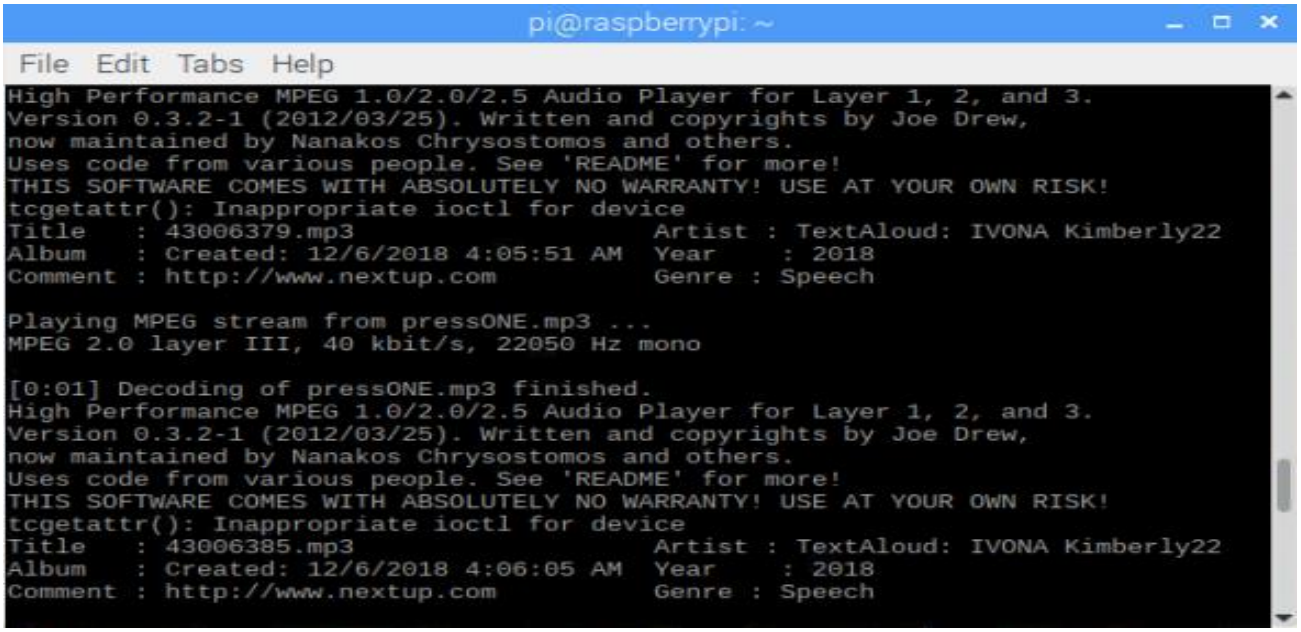




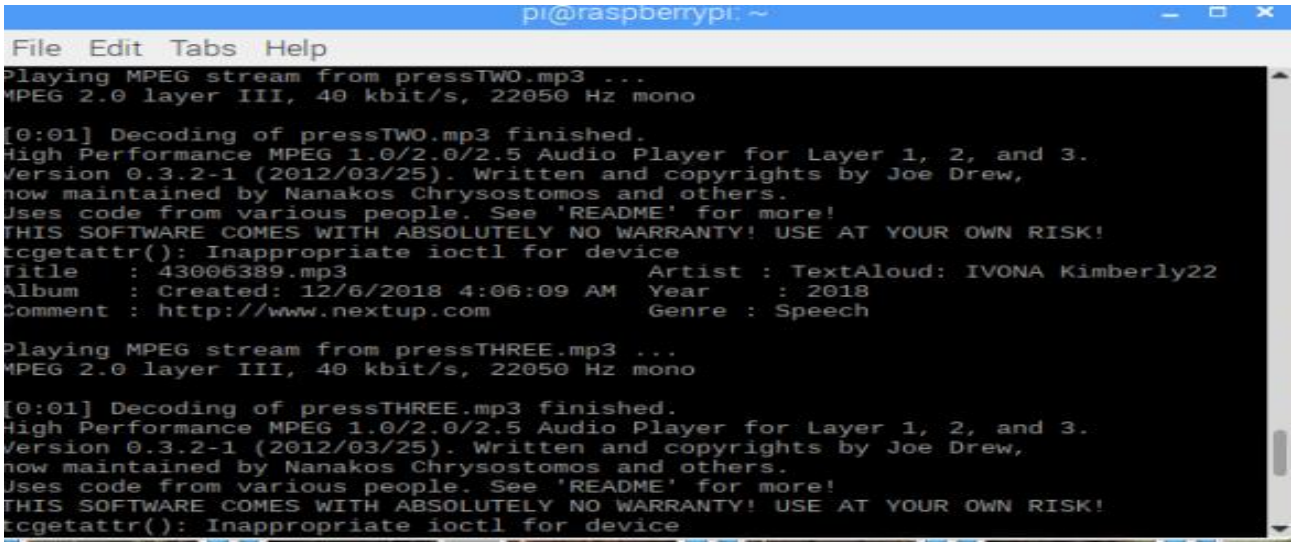
3.6If PIN is Matched Then listen the audio instructions



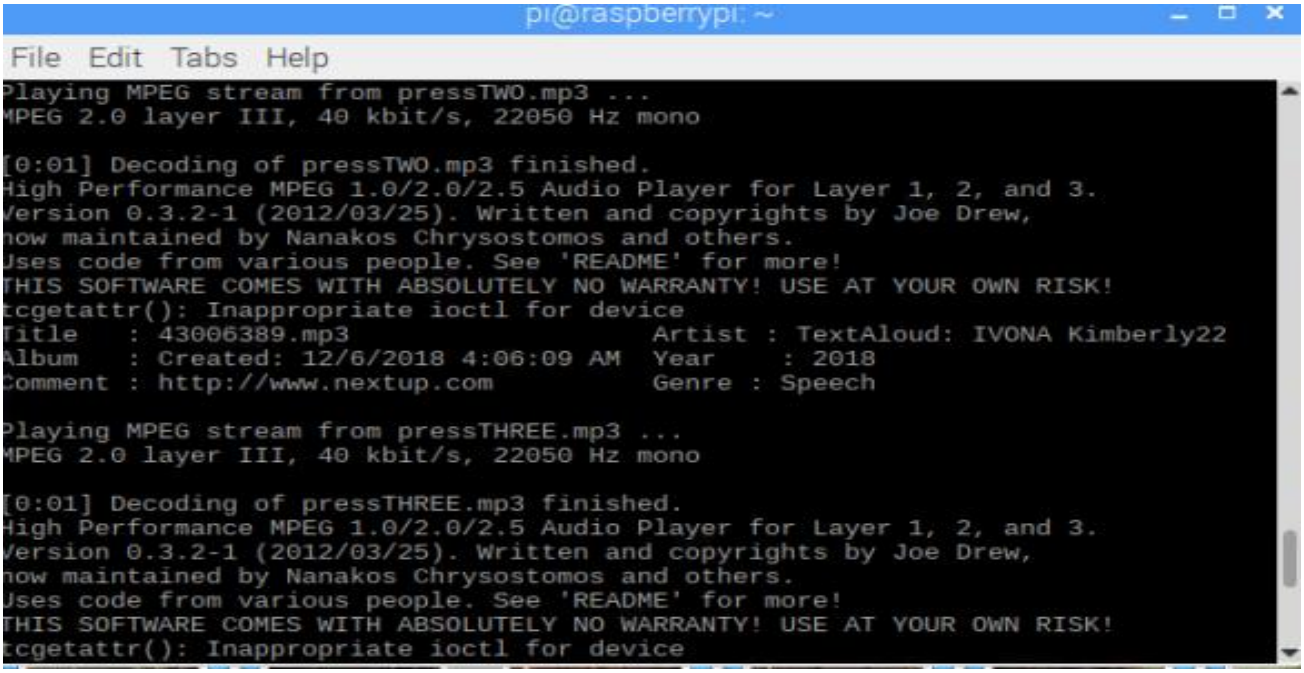
3.6.1 Press One For Withdraw Cash



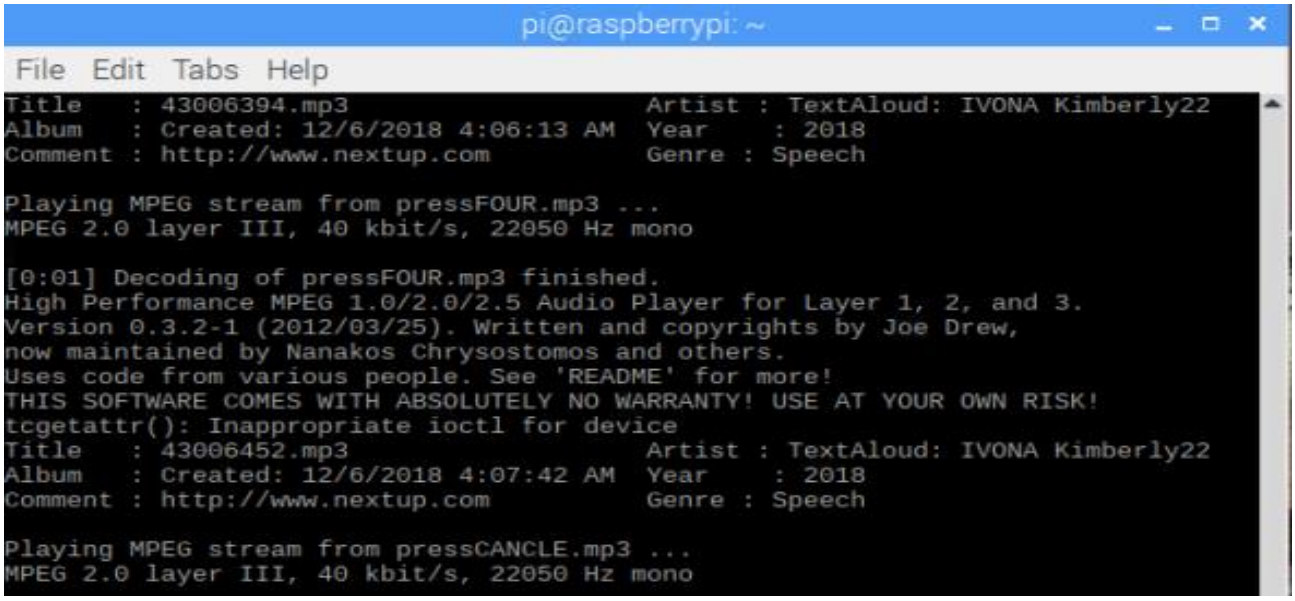
3.6.2Press Two For Balance Enquiry



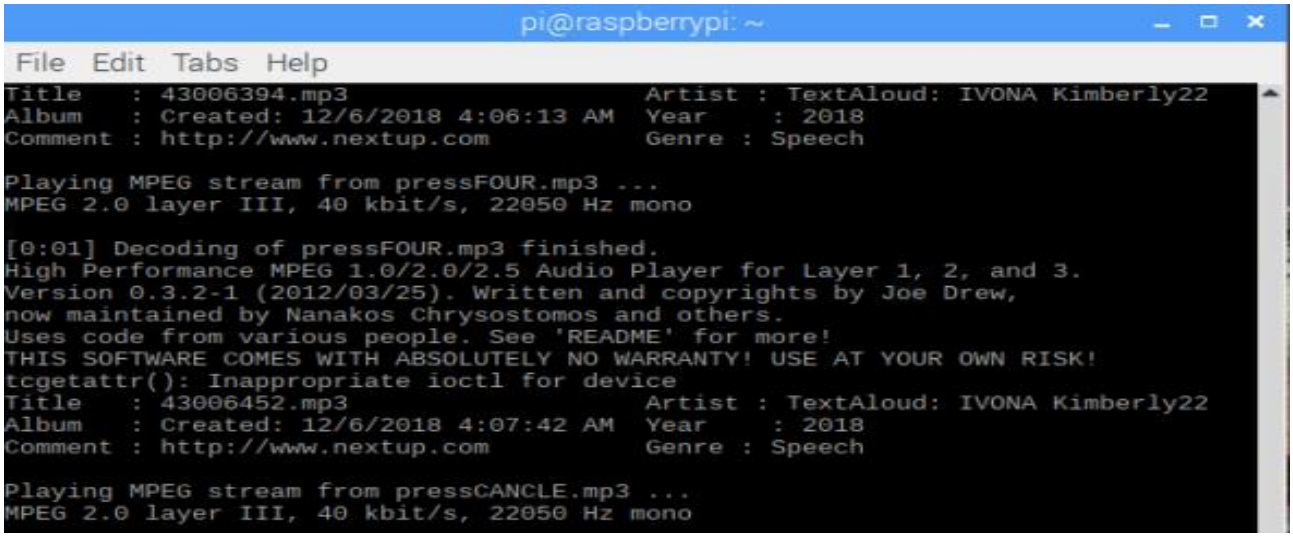
3.6.3 Press Three For Print Ledger



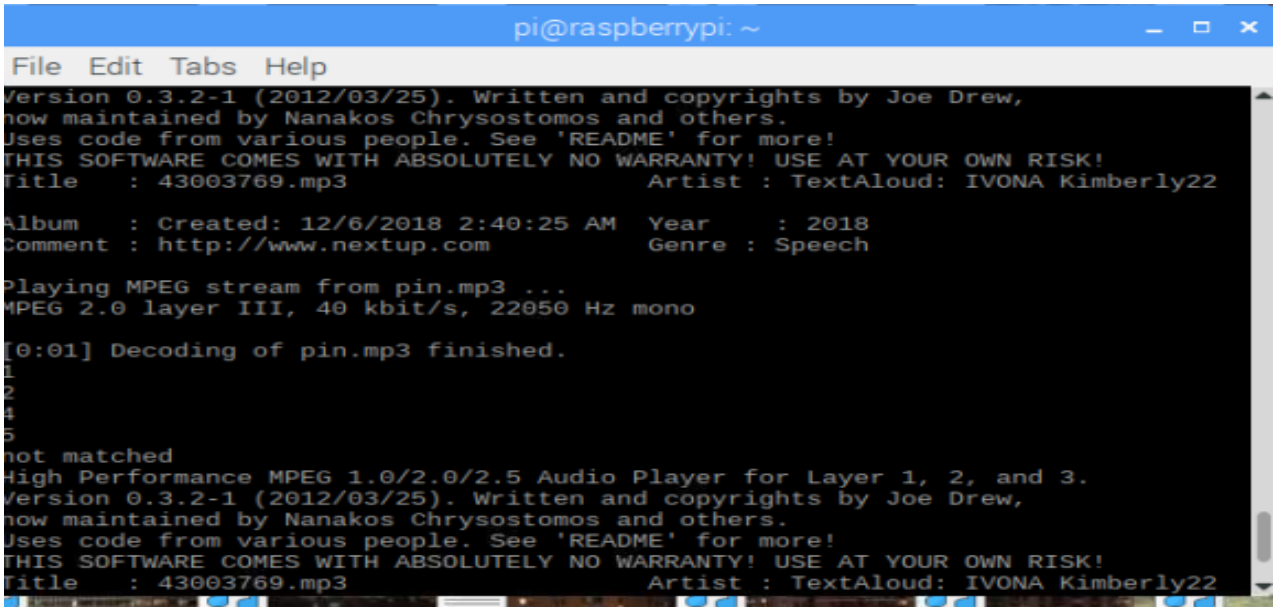
3.6.4 Press Four For to Change the PIN



3.6.5Press Cancel to Exit the Process

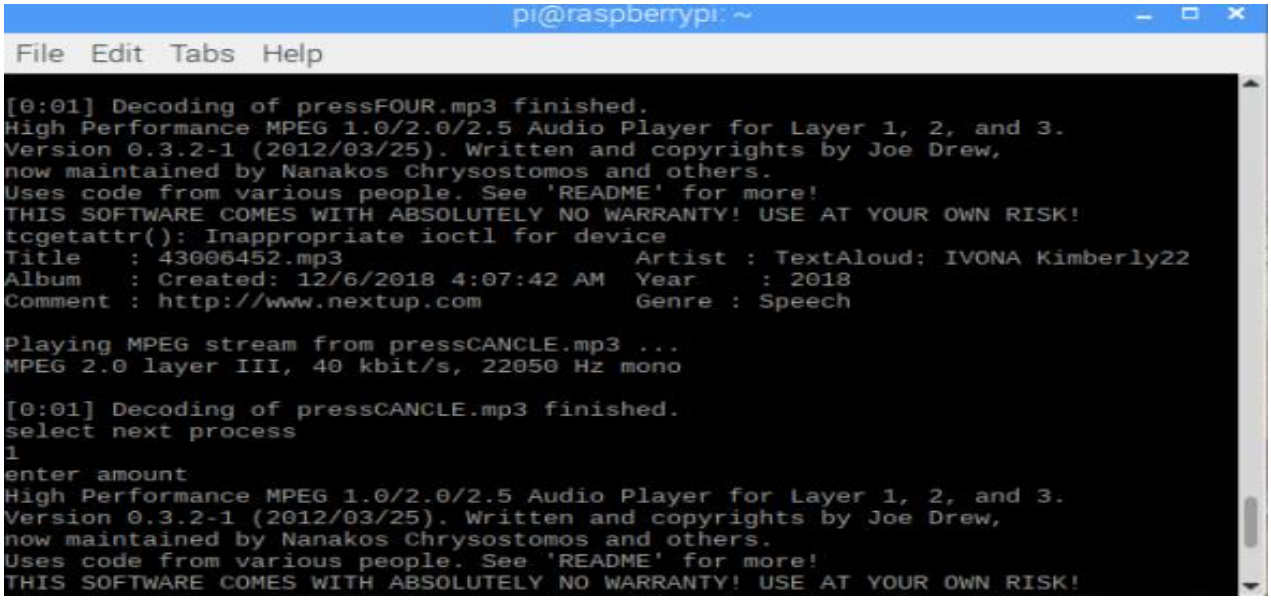


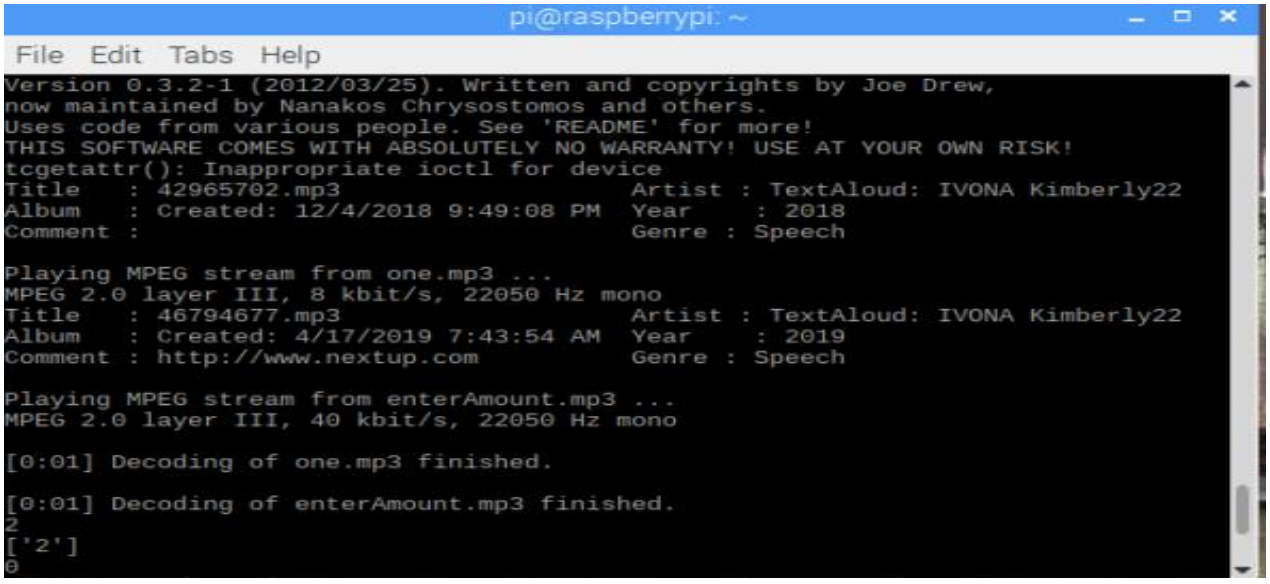
3.7If PIN is not Matched Then Enter the Correct PIN



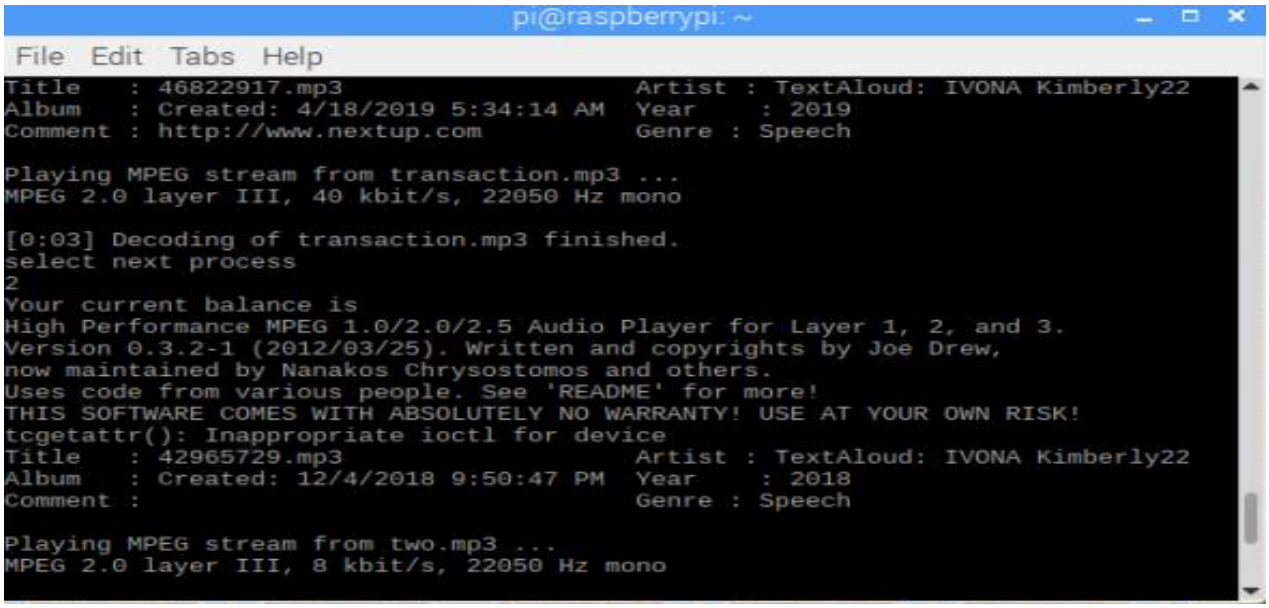
3.8Enter the Pin and Select the Process

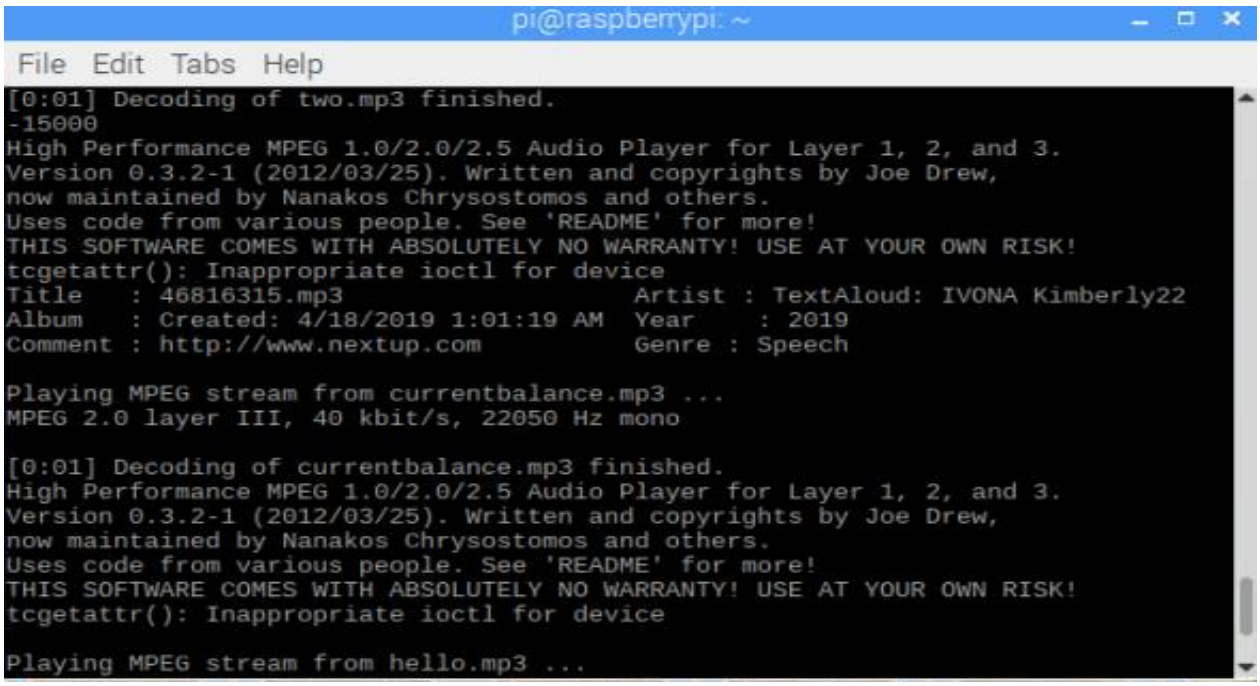
3.9Press 1 then Enter the Amount. If Entered Amount is Greater than Balance then it is Insufficient Balance.



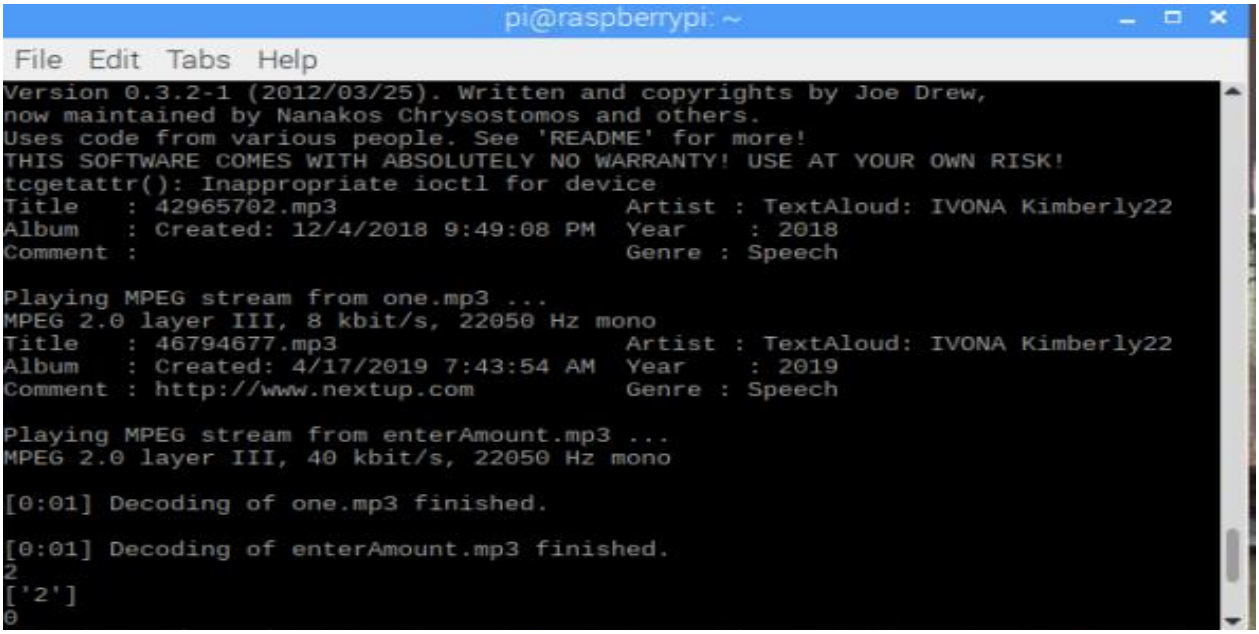


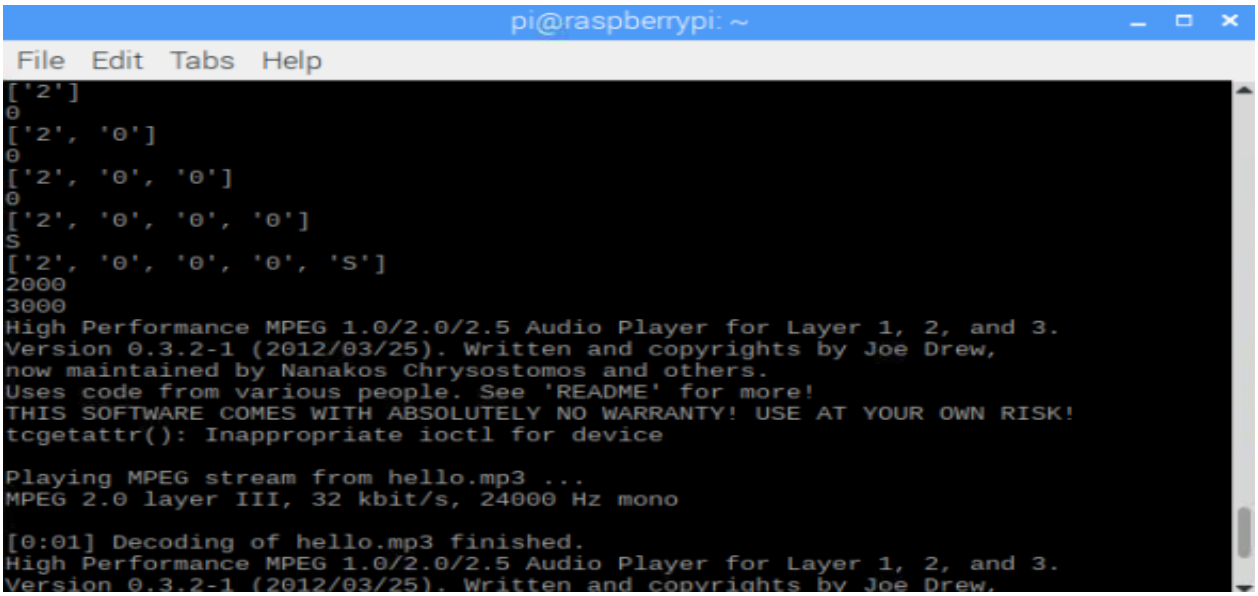
3.10If Press 2 for Balance Checking then



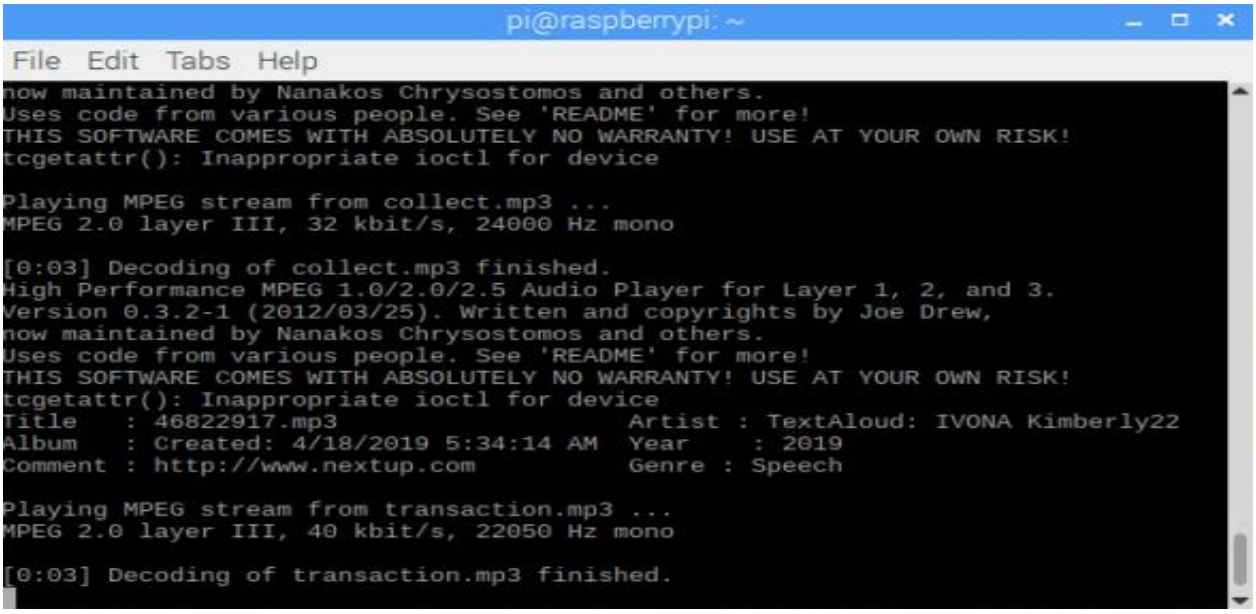


3.11If User withdraw the Cash 2000 Rs then

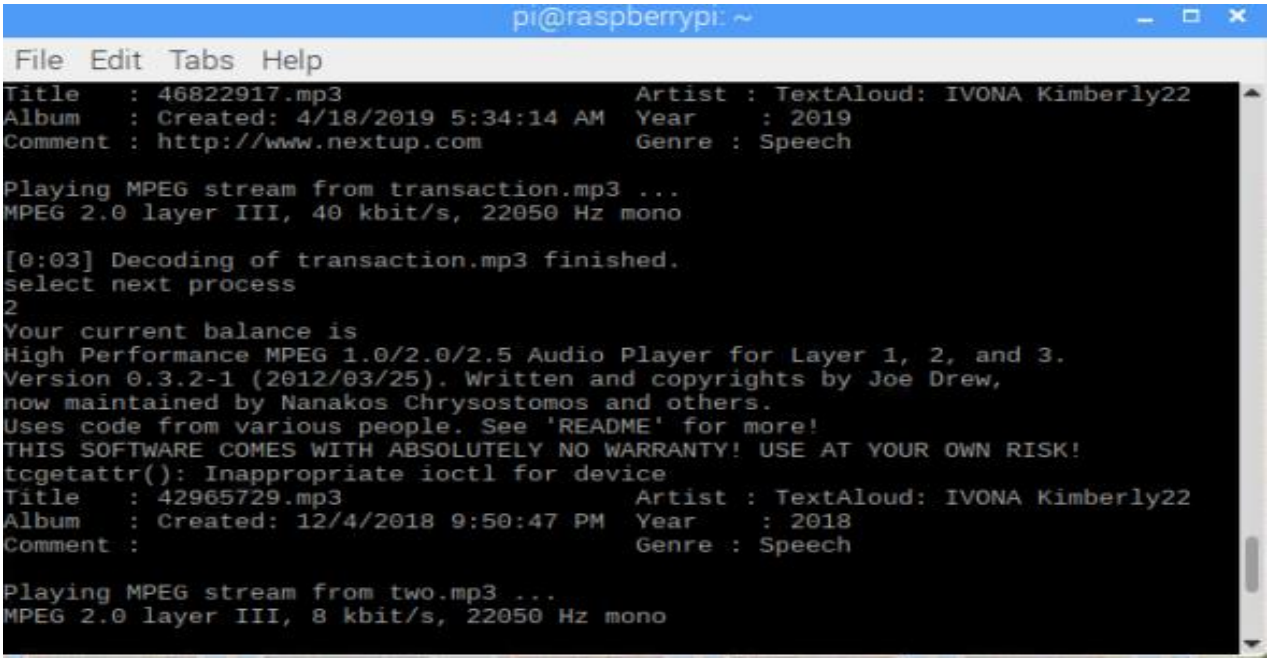


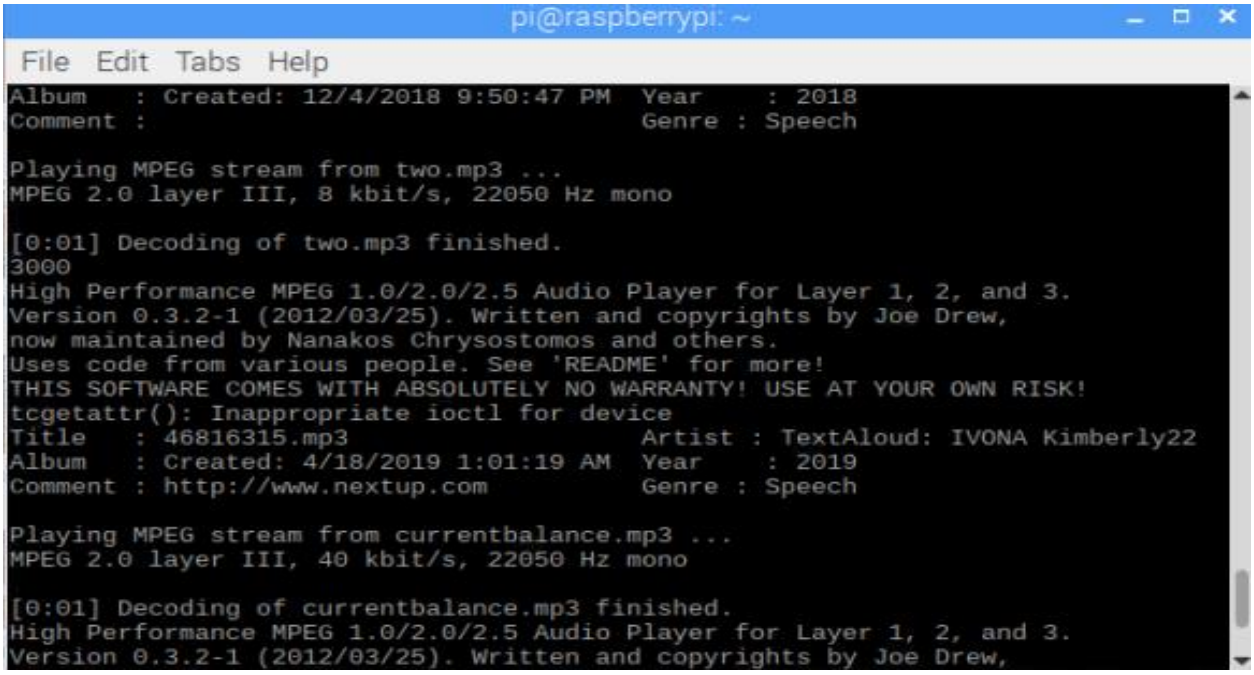


3.12Then Collect the Cash

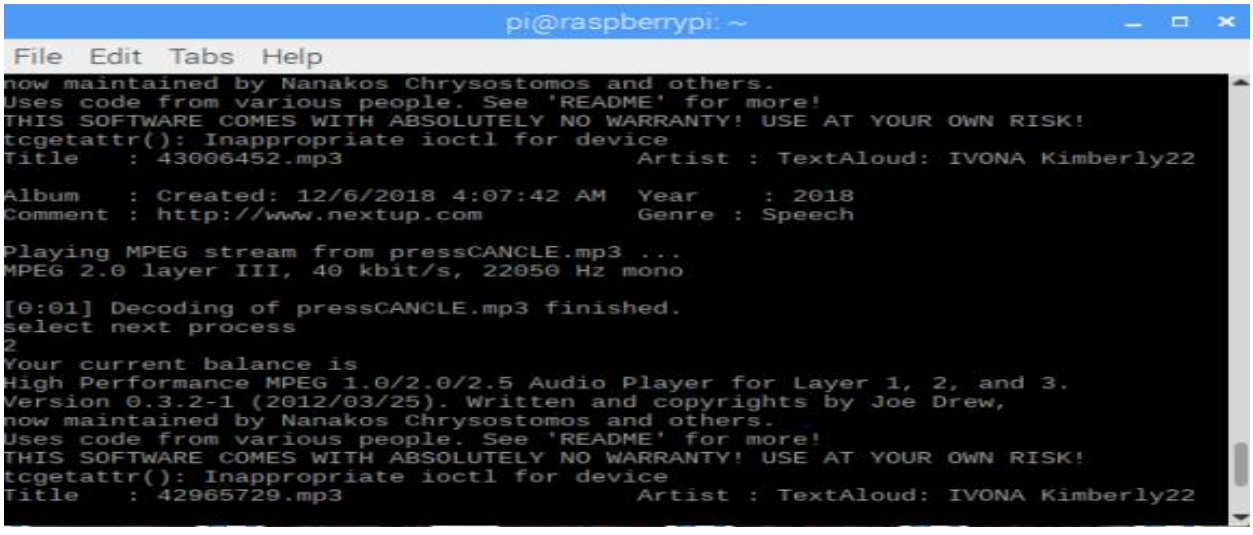


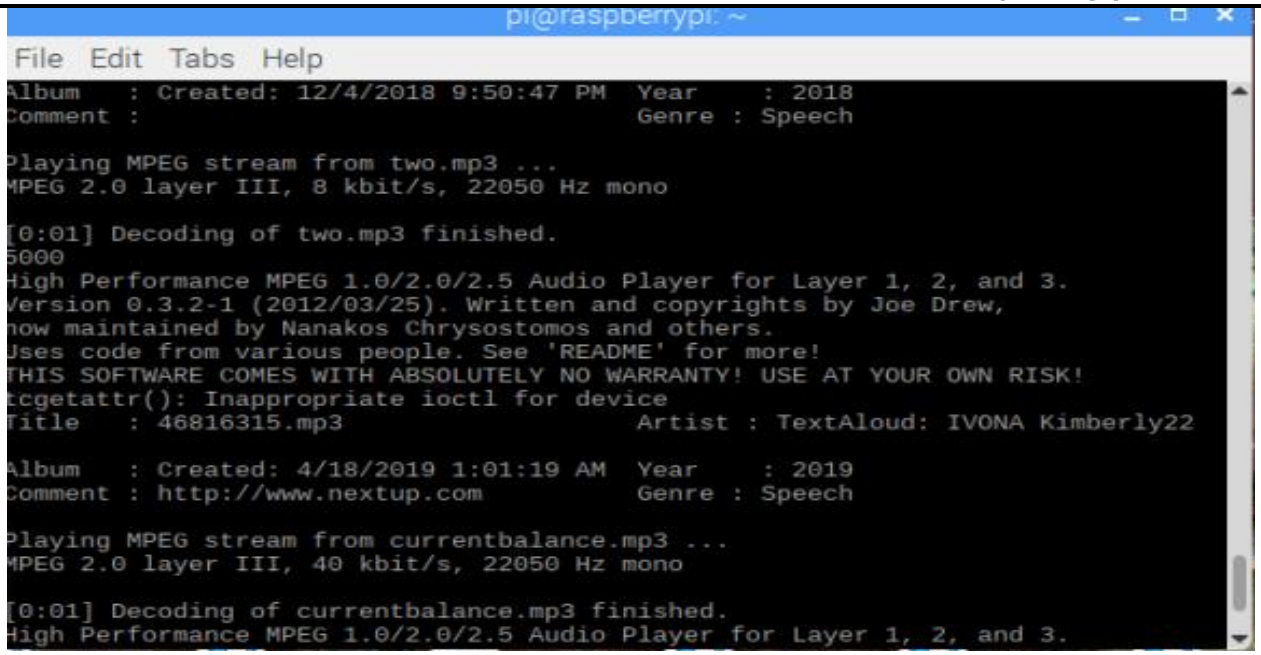
3.13If User Withdraw the Cash 2000Rs and Press 2 for Balance Checking then



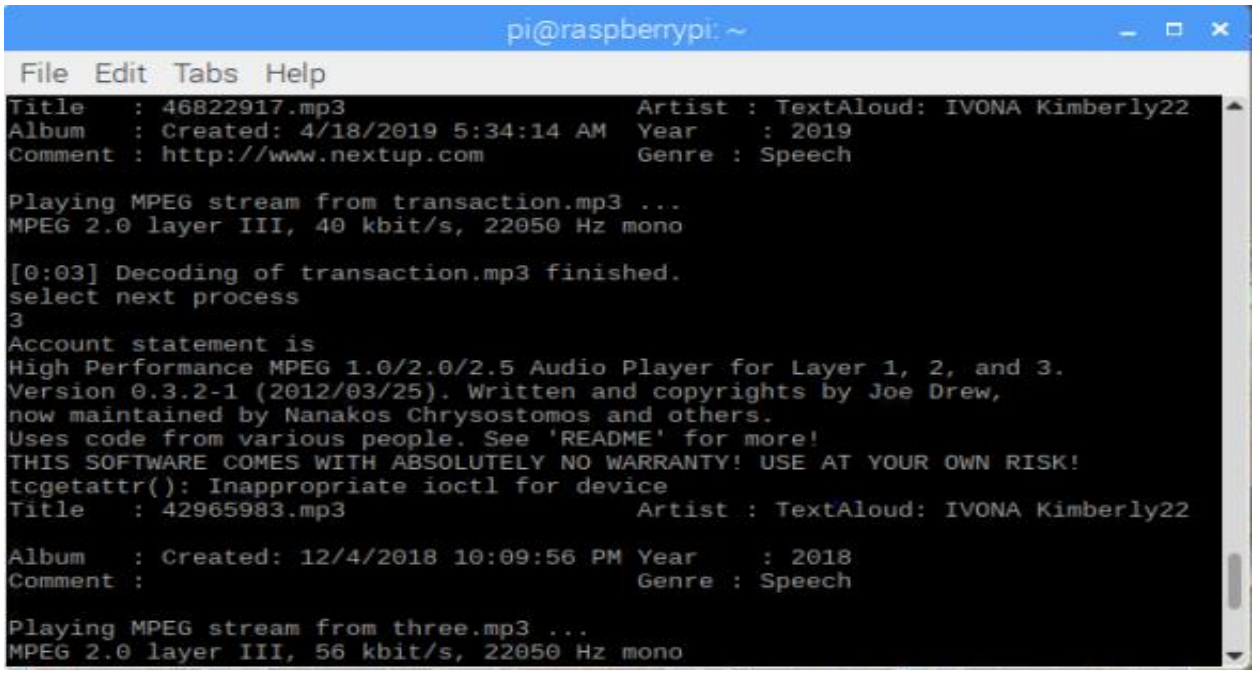


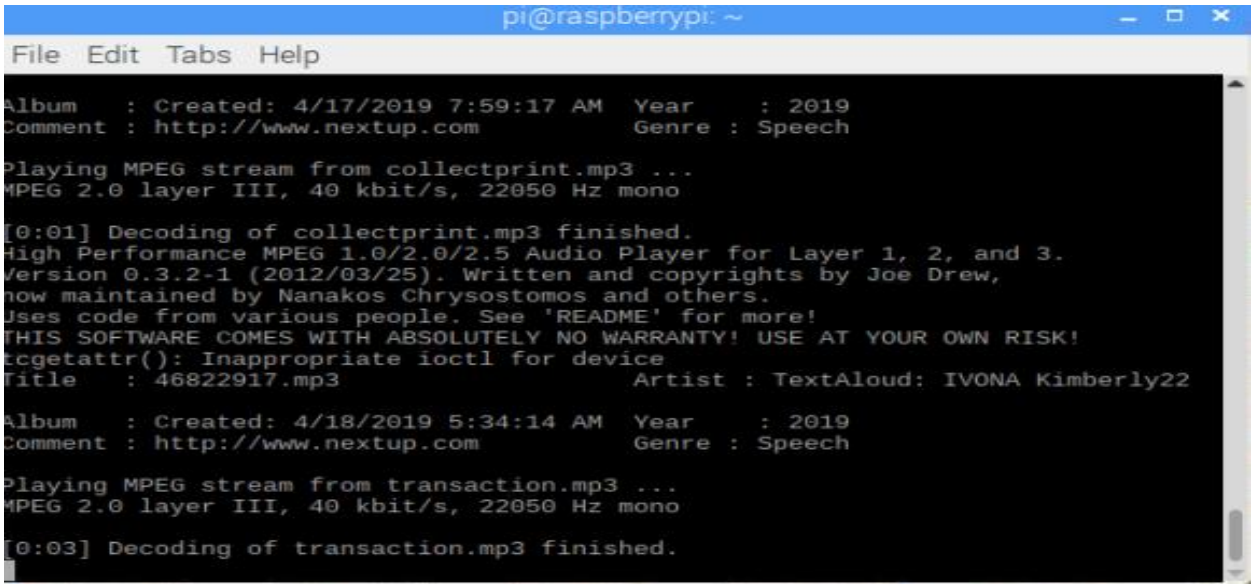
3.14If User Can't Withdraw Any Cash and Press 2 then Current Balance is



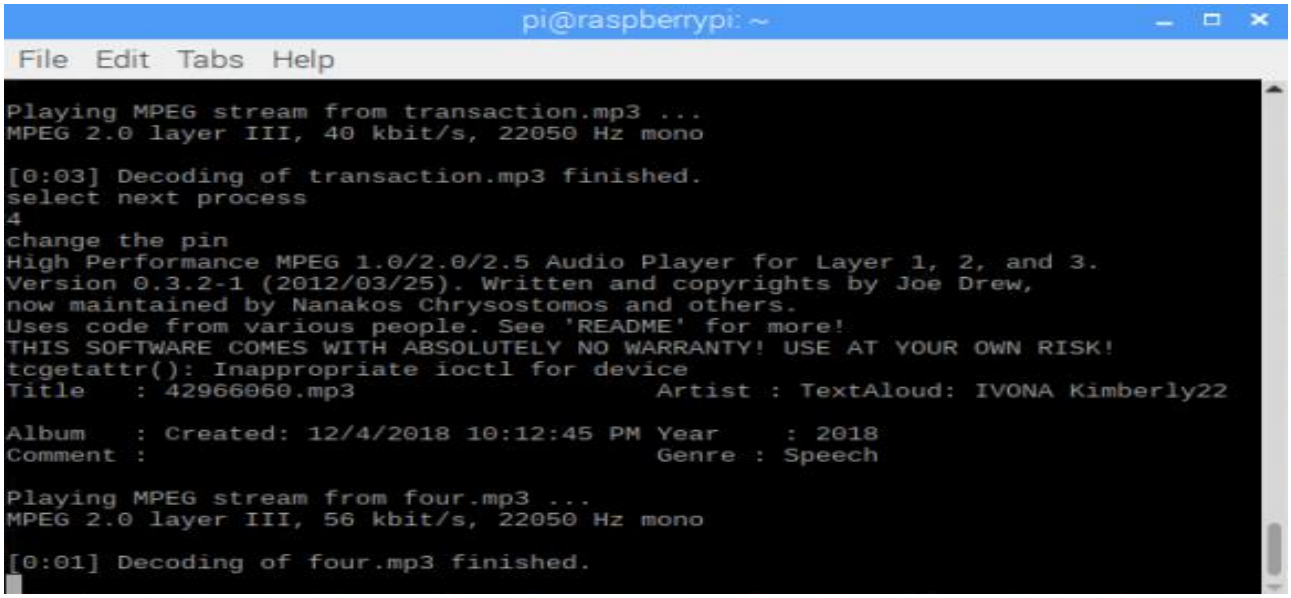


3.15If Press 3then Get a Account Statement and Collect the Print For Statement

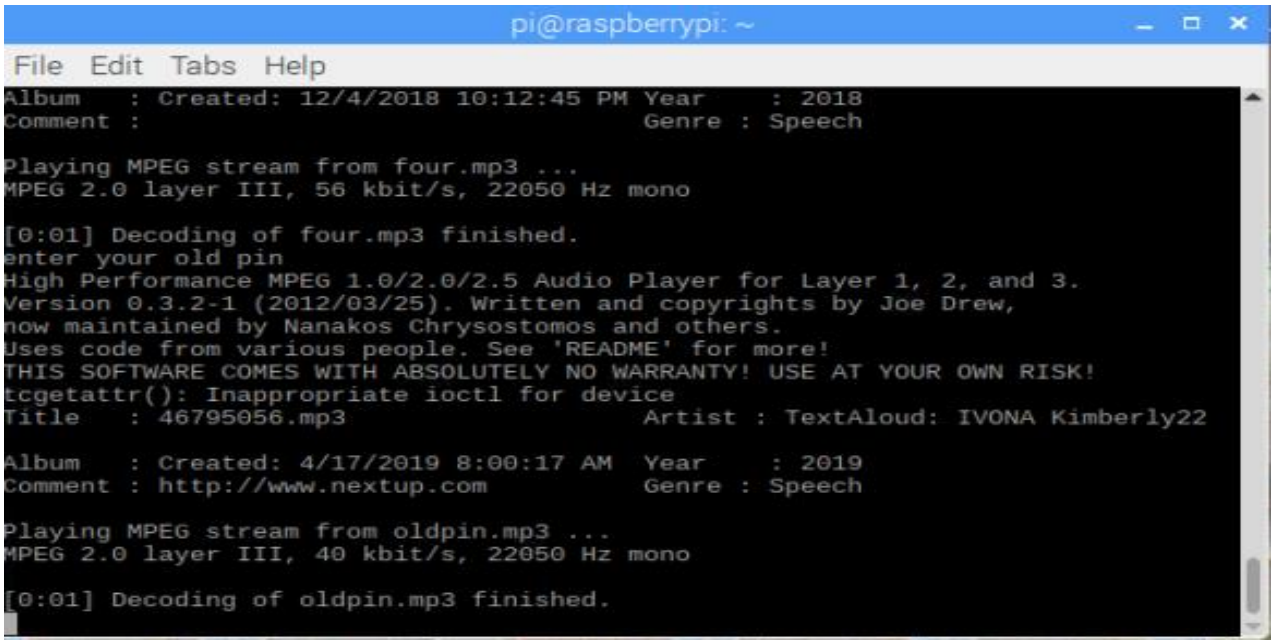


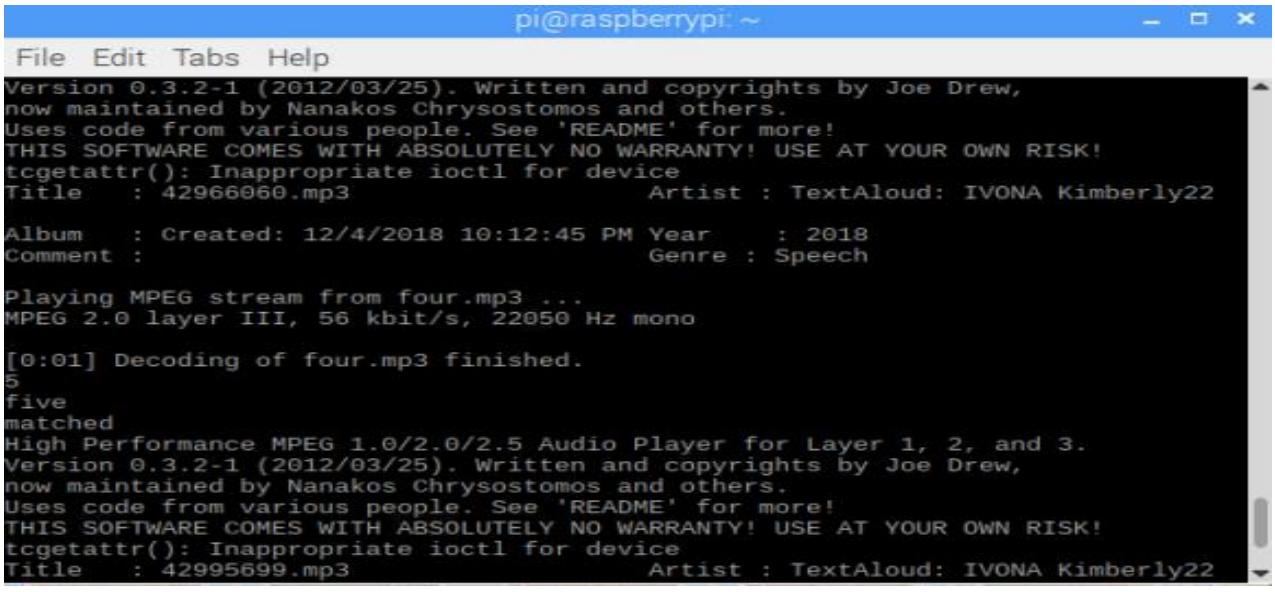


3.16If Press Four then

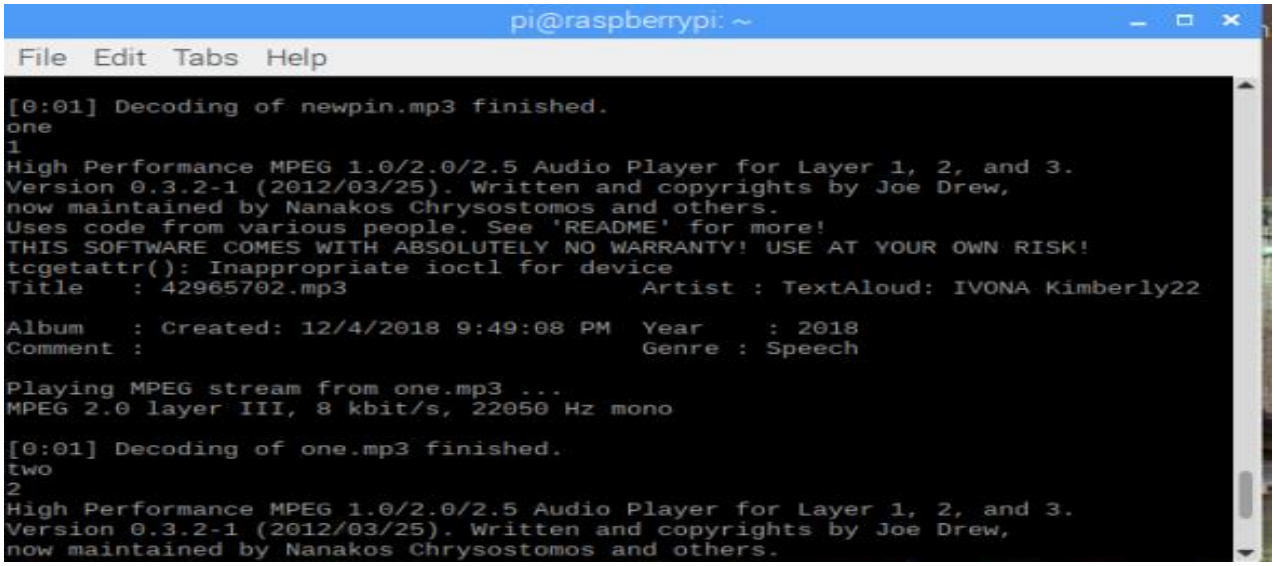


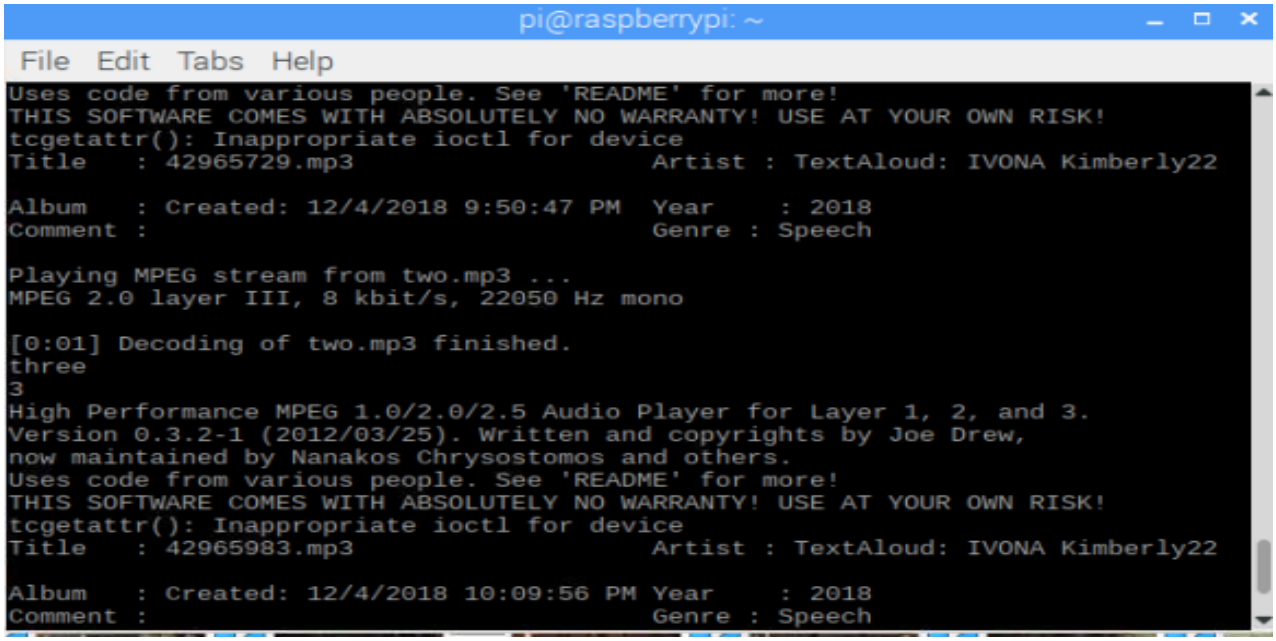
3.16.1Enter the Old PIN



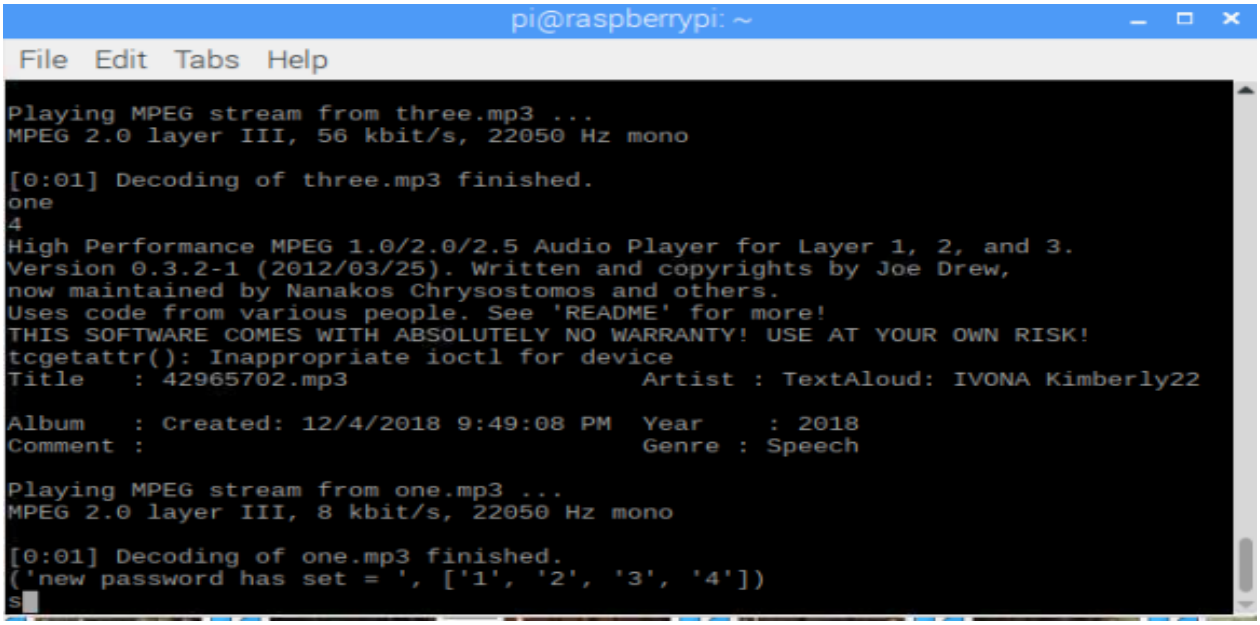


3.16.2If Old PIN is Matched then Enter the New PIN

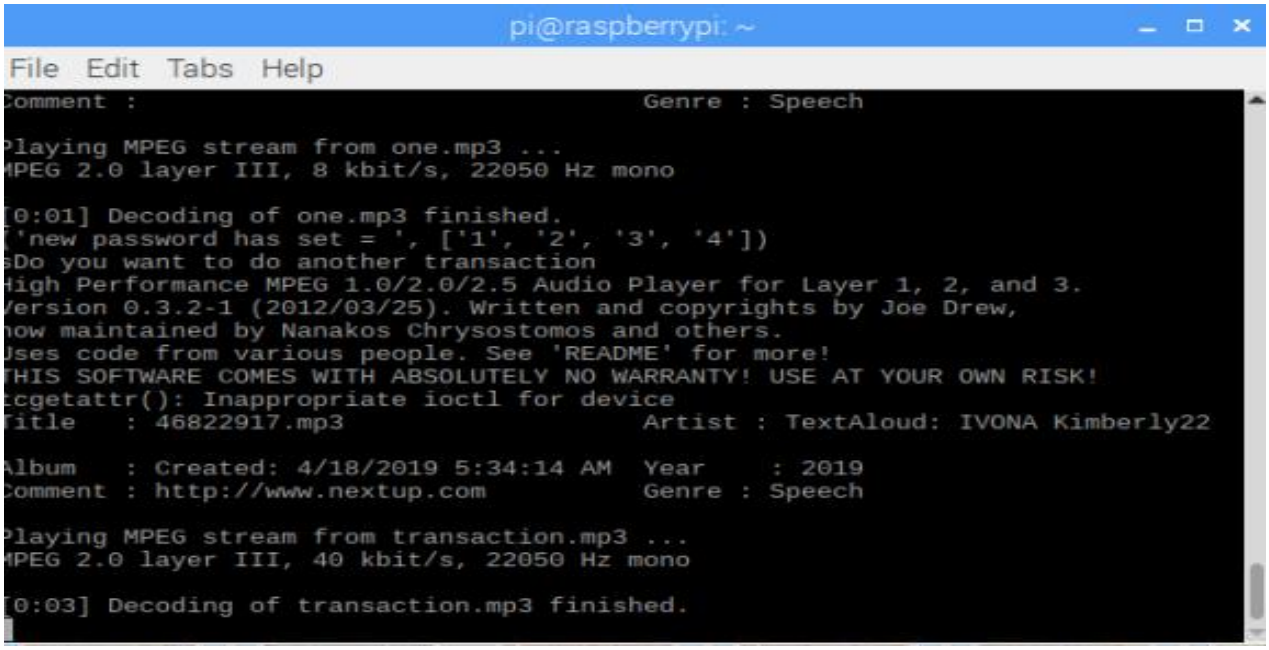




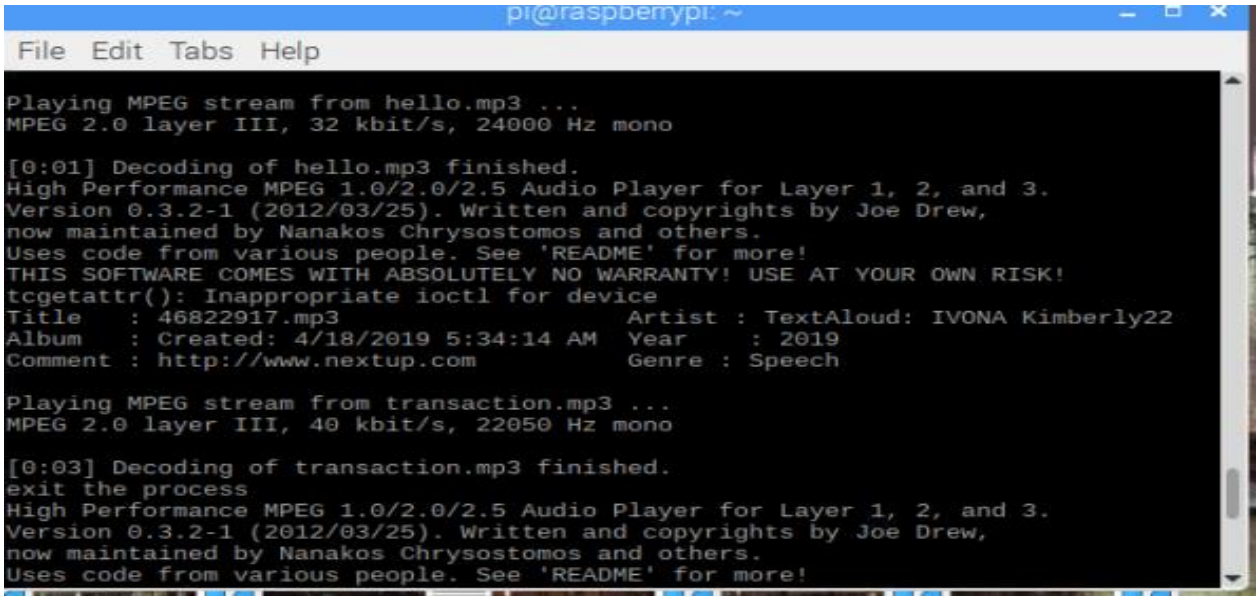
3.16.3 Set the New PIN

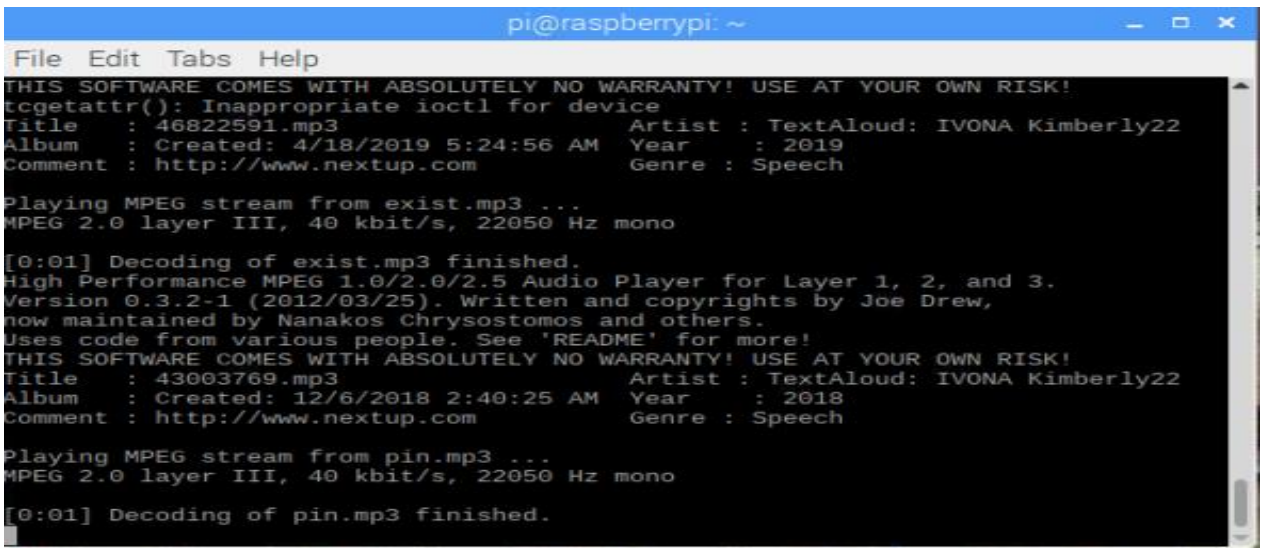


3.17If User wants to do Another Transaction then Press the Repeat Button and Select the Next Process



3.18If User wants to exit the Process then Press Cancel For Another Transaction Enter the PIN Choose the Option





IV. CONCLUSION

Blind people face many problems in their lives. One of them would be being dependent on someone else for financial transactions. In this project Braille supported ATM module is provided to the blind people. The authentication is provided by using the RFID card and face detection. The keys of an ATM are designed in a certain way to assist the blind people. The numbers are set up in a way that makes them easy to find. There is a provision using which the blind people can even choose whether to check

balance or to withdraw cash by voice command. Hence, with the help of this system the blind people complete their banking functions independently.

V. ACKNOWLEDGEMENT

I would like to thank 3D technician**,** Ms. Vaibhavi sutar and students in blind school for their valuable time and providing informative contents.

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