COMP4 Coursework

Analysis

Introduction

Client Identification

My client is St. Andrew's Street Baptist Church, the administration consists of a team of up to five people of various ages with little experience with computers apart from performing basic tasks such as word processing and using simple spreadsheets. Currently the church has a simple file sharing between a small network of 5 computers, these computers include Apple and Windows computers.

All of the members of the administrative team at St. Andrew's Street Baptist are required to attend various meetings and complete certain tasks, all of which have potential to be confidential. The team provides pastoral care and other supportive services to people all across Cambridgeshire and sometimes further. Being a large city centre church, the membership and the composition of the administrative team is subject to change on a regular basis.

The Church has expressed a desire to use a computer system to organise, centralise and control all of the data involved in operating the Church. With the proposed system, the admin team would like to be able to keep a record of all of their meetings and tasks as well as keep track of the quantities of a few finite resources used in the offices.

Define the Current System

The current system in place is a manual paper based system which involves each member of the administrative team writing down details of meetings, appointments and tasks and recording it in a personal dairy and/or planner. This information includes: a title for that meeting, appointment or task, who else is meant to attend, the location of the meeting or appointment and the date & time at which this meeting will take place.

If a meeting involves more than one person (as most meetings do!) then the team relies on either verbal or email communication of the key pieces of information for that meeting, the person receiving the request for meeting then replies to that email to confirm or deny their attendance to the meeting, if the accept the meeting, they then add a copy of the information to their planner, if not they archive the email and take no further action.

There is also a central list of the resources available to the office staff which is updated on a regular basis with the new amounts of the various resources. All members of the administrative team have access to this list, and there is shared responsibility of who goes to purchase additional resources if the current stock is depleted.

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Describe the Problems

The current system should work well, in theory, however there have been many occasions when a meeting has been missed because an email failed to send or the organiser forgot to tell them. Often the office has ran out of a particular resource because nobody updated the list or nobody saw that they were running out. Each person has a separate copy of each meeting that they are due to attend which could (and often does) lead to inconsistencies in the information that each person has, also the duplication of the data requires a large amount of physical space. The Church also plans to move it's offices so having a large amount of data increases the risk of data being lost or damaged during the move. Furthermore, the data is not stored in a secure location, it is either left in an office which is not always locked during the day, while the Church is open to the public or it is with it's owner who is liable to drop/forget/lose it which means the data is not secure.

Insert the questionnaire here.

Investigation

The current system

Data sources and Destinations

In the current system, there is a definite flow of data between the different people working in the office, each person is both a source and destination of data. When a person creates a meeting they will write it in their own personal diary, and then they will either email or speak the information about that meeting to whoever they are requesting to attend. The person who is being asked to attend sends information accepting or rejecting the request of attendance back to the person who 'owns' the meeting.

Source	Data	Example Data	Destination
Meeting Owner	Meeting title, meeting location, meeting date & time, people requested to attend the meeting	Coffee with Steve; Ian's Coffee House; Tuesday 13th October 10:15am; with Steve, Joel and Sabrina	Meeting Attendees
Meeting Attendee	Meeting title, Confirm Attendance?	Coffee with Steve, Attending	Meeting Owner
Task Owner	Task title and a brief description of the task	Refile the copier paper; Make sure you use the yellow paper for this week's service sheets.	A scrap of paper pinned to a noticeboard, or a blank page in a personal notebook
Team member	Resource name, resource quantity, resource cost etc	Teabags, 50, 4.30	The resources book
Resources book	Resource name, enough of this resource available?	Teabags, no	Any member of staff

Algorithms

In the current system, there are a few basic algorithms used. The first of which is for checking if a meeting will have all of the requested people in attendance.

```
AllAgreed ← True
Attendees ← [A list of attendees]
FOR index ← 1 TO length(Attendees) DO
      IF(Attendees[index] = False) THEN
            AllAgreed ← False
      END IF
END FOR
IF(AllAgreed = True)THEN
      Meeting goes ahead
ELSE
      Alert meeting owner that not everyone has responded
END IF
```

Another algorithm used has the purpose of checking if someone has completed a task they set themselves, this also ensures that time is not wasted between tasks.

```
TaskComplete ← False
WHILE TaskComplete = False DO
      IF Busy = False THEN
            CompleteTheTask()
      END IF
END WHILE
```

The third, and final algorithm used by the team is to check if there are any resources that need replenishing.

```
ResourceInNeed ← EmptyList()
Resources ← [A list of resources & their quantities]
FOR index ← 1 TO length(Resources) DO
      IF Resources[index][RequiredAmount] < Resources[index][CurrentAmount] THEN
            ResourcesInNeed.append(Resource[index])
      END IF
END FOR

FOR index ← 1 TO length(ResourcesInNeed) DO
      OUTPUT ResoucesInNeed[index]
END FOR
```

Data Flow Diagrams

Key:

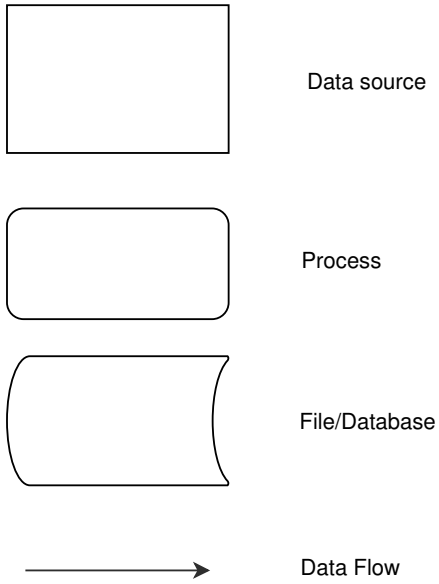

Diagram for the meetings subsystem:

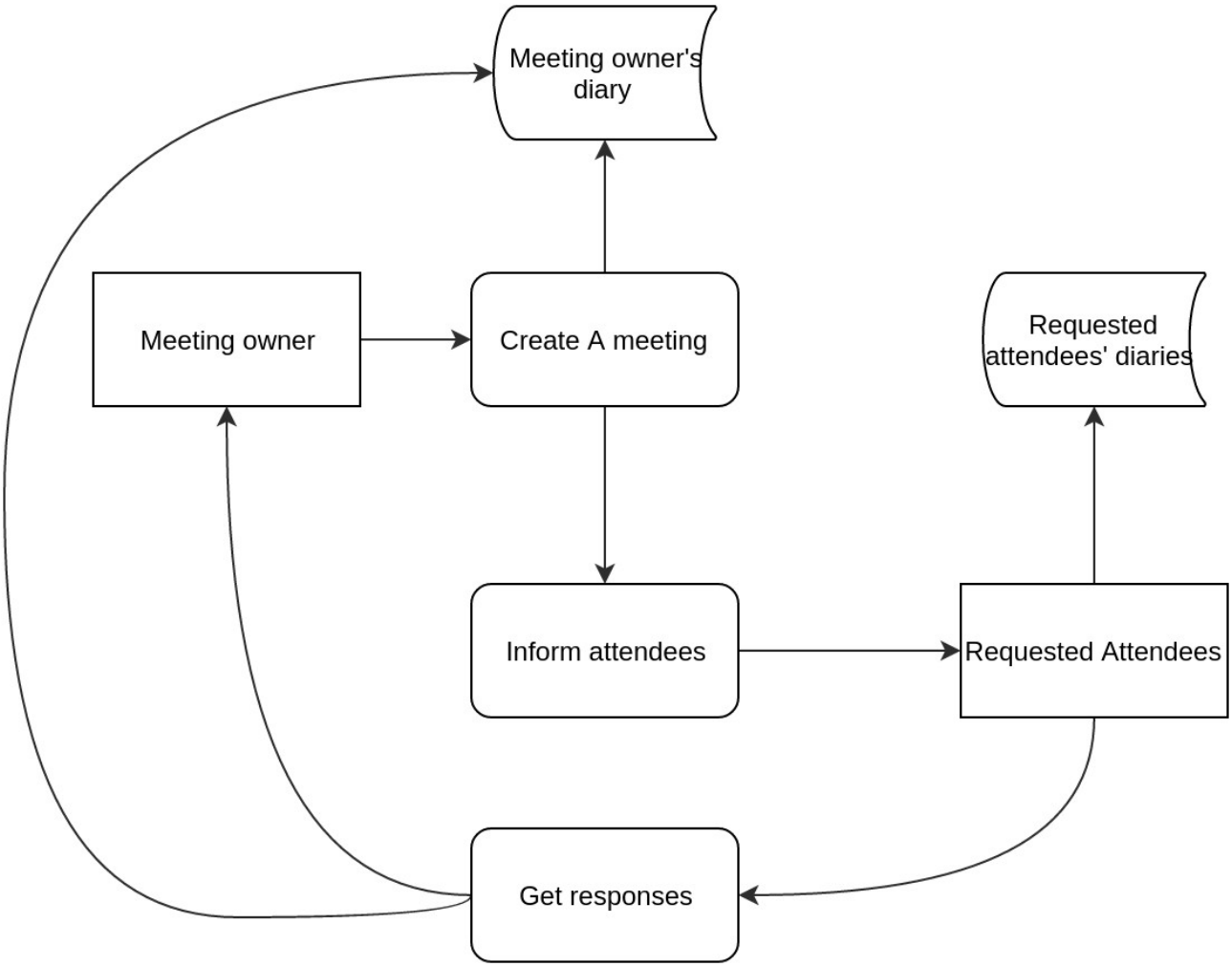

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Diagram for the tasks subsystem:

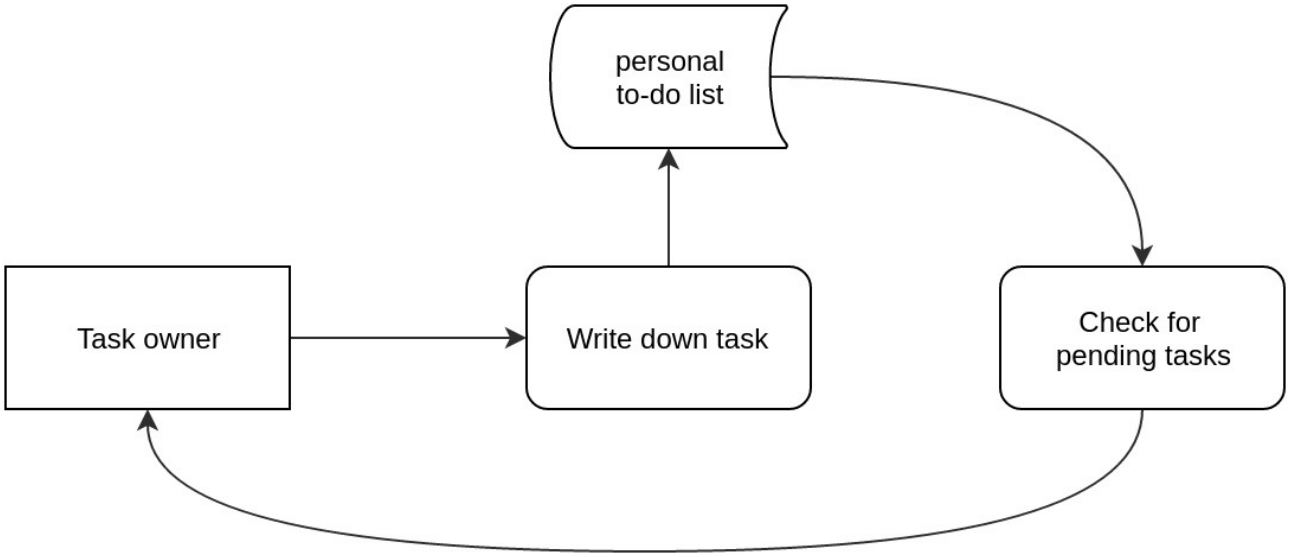
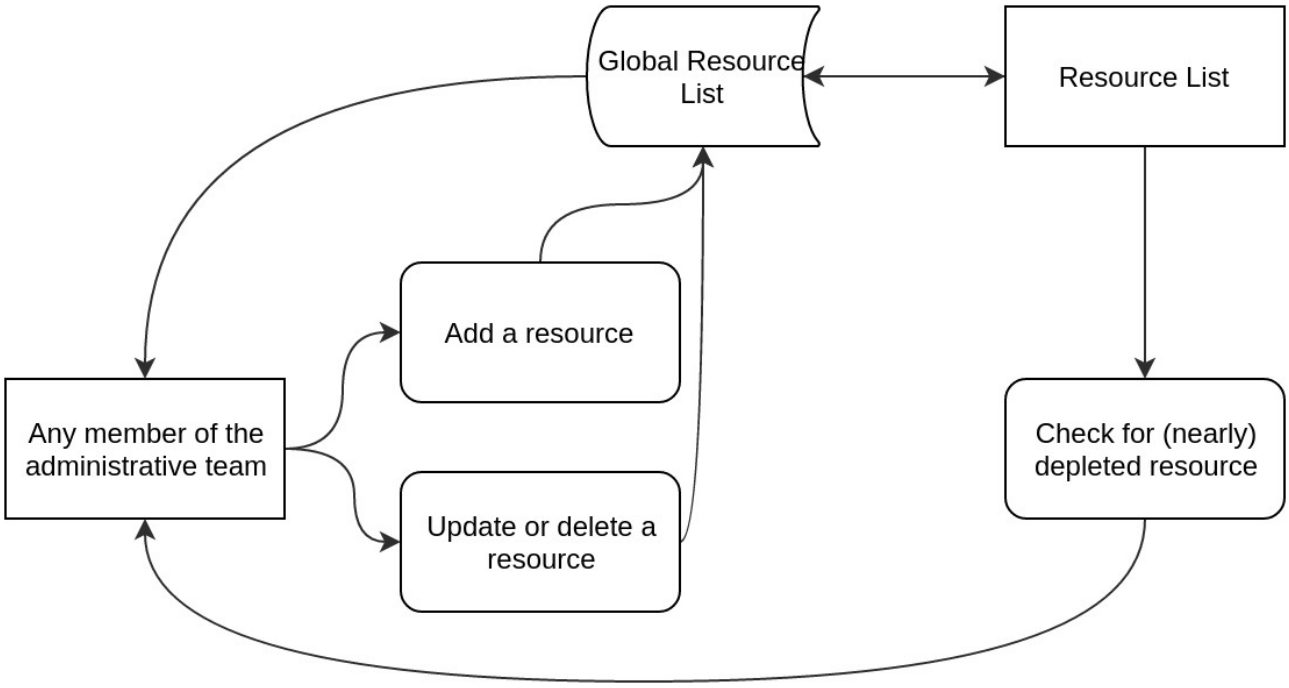


Diagram for the resources subsystem:



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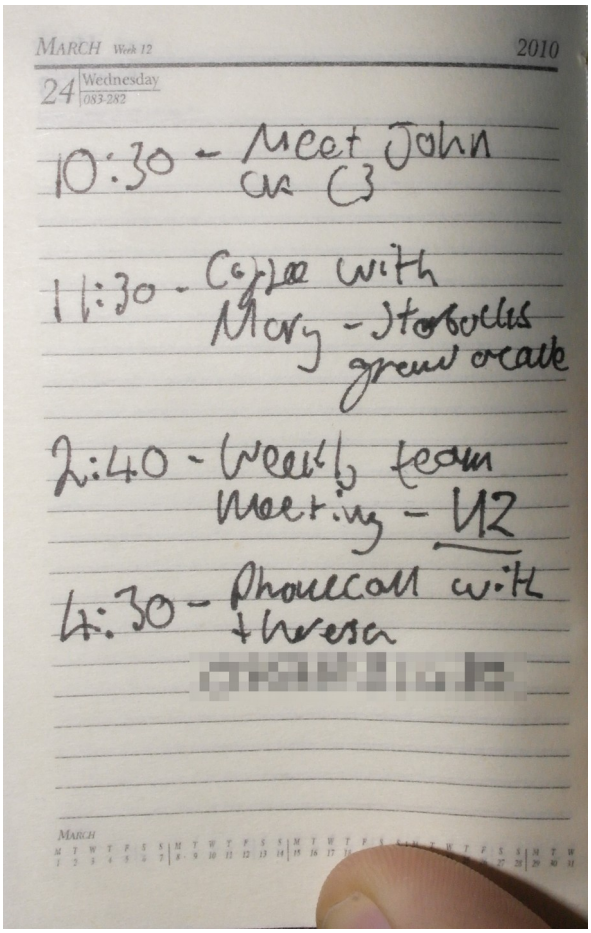
Input Forms, Output forms and Report Formats

The current system has three input forms – The team member's personal diaries, the general format used for making notes of tasks and the record book containing the list of resources. The current system has similar output forms, for meetings, often the members of the team give each other photocopied pages from their diaries and for tasks the output form is identical to the input form.

Below is a copy of an old (but still using the same system of notation) diary from one of the supporting staff at the Church, this is both an input and an output form. It contains a list of the day's appointments, with their date & time, a brief subject line and the location of the meeting, as well as any other attendees. Unfortunately



the latest record I was able to obtain was from 2010 as often the contents of the diaries are strictly confidential because the Church is responsible for caring for many vulnerable people – hence some of the information has been omitted.

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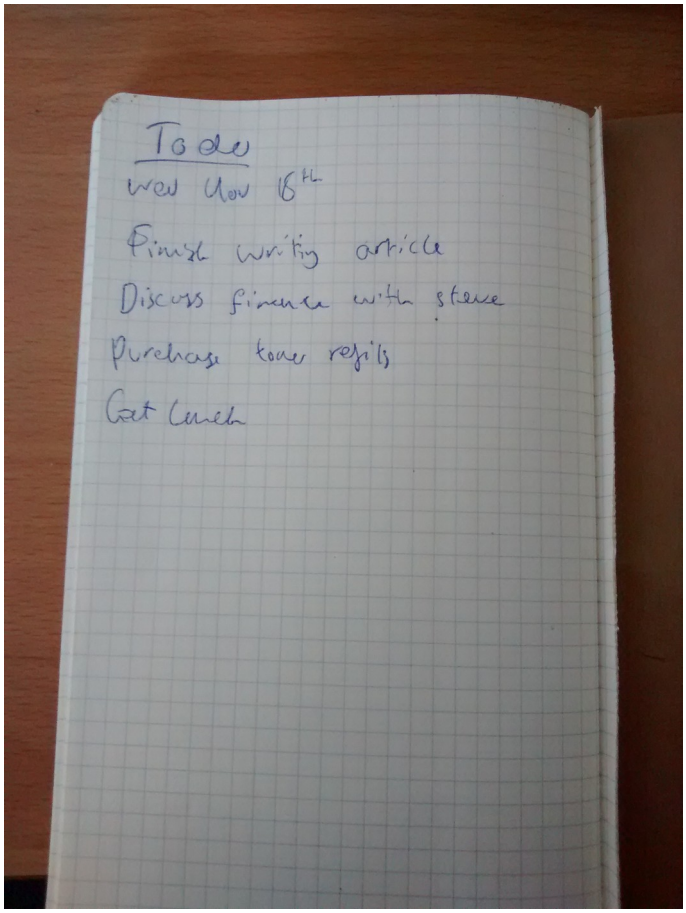
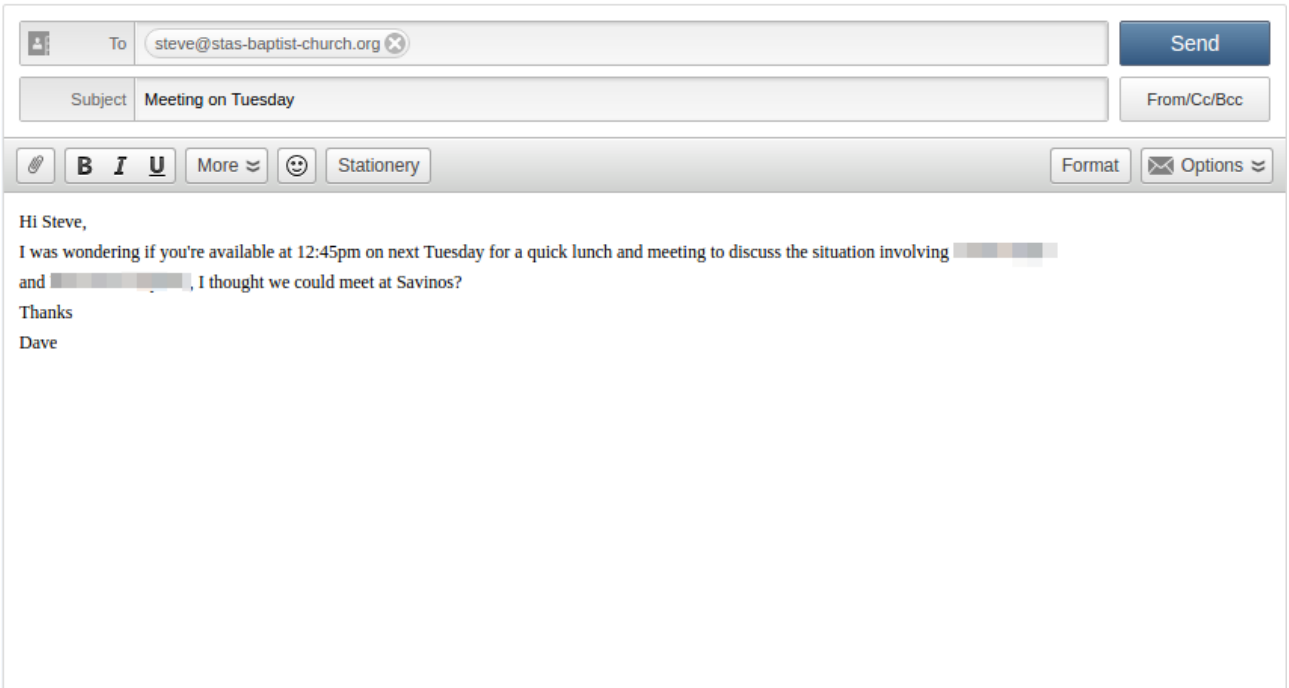
Below is an example of a list of tasks from one of the office staff's notebook, it contains a list of tasks that they need to get done that day. The team also uses Post-It notes, record cards or digital reminders on their phones as alternatives to having a list of to-dos.



Here is an example of an email requesting someone to attend a meeting:



Note that the message is concise and to the point, the staff team deals with hundreds of emails per week and none of them have time to read through a detailed explanation for each meeting they're going to attend.

The proposed System

Data sources and destinations

In the proposed system, the users will input the information for their meetings, tasks and resources into various forms.

Source	Data	Data Type	Destination
Meeting Owner	Meeting Date & Time	String	Database – Meetings
	Meeting Title		
	Brief meeting description		
	Location		
	Requested Attendees – UserID	Integers	
Database - Meetings	Meeting Title	String	Requested Attendee
	Meeting Date & Time		
	Brief description of meeting		
	Location of meeting		
	(Other) requested attendees	Integers	
Requested Attendee	MeetingID	Integer	Database - Meetings
	Confirm Attendance?	Boolean	
Database – Meetings	MeetingID	Integer	Meeting Owner
	Confirm Attendance?	Boolean	
Task owner	Task Title	String	Database – Tasks
	Task Description		
Database – Tasks	Task Title		Task Owner
	Task Description		
Member of staff	Resource Title		Database – Resources
	Resource Cost	Integer	
	Resource Current Quantity	Integer	
	Resource Required Quantity		
Database – Resources	Resource Title	String	Member of Staff

Source	Data	Data Type	Destination
	Resource Cost	Integer	
	Resource Quantity		
	Resource Required?	Boolean	

Data Flow Diagrams

{do these later}

Data Dictionary

Volumetrics

There are 5 members of the staff team which will have between 2 and 5 meetings per day, which means in one month, the system will have up to 750 meetings, each of which will require up to 1815 Bytes, which will total at 1.3MiB per month for the meetings system. However, the number of people who will be involved in meetings will be subject to change on a weekly basis, it could easily double, triple or more which means that this part of the database could use up to 5MiB per month and up to 60MiB per year. The user's table will contain a record of each user who has meetings, which totals at 798 Bytes per person. In a large city centre Church, there are approximately 250 congregates, of which 50 will be involved with meetings, which means the user's database will require at minimum, 39KiB. However this number is subject to change and could easily double in the space of a year, but because of the data protection act, some means of ensuring the data does not expire would mean that as, or shortly after new users are added, the old users are removed so the size of the table will only fluctuate by $\pm$10KiB, so to ensure there's always enough space, this table will be allocated 60KiB. The tasks table, which is effectively a record of each user's to-do list, will contain records for between 5 and 10 users each with up to and estimated 15 items per day. Each item is 5170 Bytes, which means every day, each user will generate up to 76Kib, with up to 10 users totalling at 760Kib, so in a month the database will contain up to 22.8Mib. However, the nature of the tasks means that they will expire after a certain amount of time, which will limit the size of the database. If the expiry period of each task is set to one year, this table will not exceed 273.6MiB. The resources table will contain a record of all of the things the Church regularly buys, including cleaning supplies, food, drinks, cafe supplies. The church has several areas which require resources, some of which require more than others. If in total, the Church, buys 300 consumable products, each record will require 271 Bytes, with 300 items, the table will require 80KiB, however there is potential for new items to be added on a regular basis, so this table could easily grow to 100KiB.

The total database requirements are 334MiB, for a year's worth of data. The program itself, the PyQt Library and Python will require about 130Mib, which means the total estimated size of the system will be 464MiB.

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Objectives:

General Objectives:

- A simple and clear layout structure for viewing recorded meetings.
- A simple and clear layout for adding new meetings.
- A simple and clear layout for adding and viewing a to-do list of tasks.
- A clear and effective way of monitoring stock levels of various resources.
- A way to edit the user information

Specific Objectives

- Viewing meetings:
  - A clear and consistent structure used for displaying meeting objects.
  - Minimal controls to ensure accessibility and to reduce the necessity for training.
  - Only essential information shown.
- Adding meetings:
  - An input structure that follows a pattern similar to how the meetings are displayed.
  - Easy selection of attendees from a pool of available users.
  - Validation of the user's input.
- Adding and Viewing To-Dos:
  - A clear, prioritized list of tasks
  - The option to mark tasks as “Done”
- Viewing and editing resources:
  - An ordered table of information for all the recorded resources
  - The ability to add additional resources at any time
  - The ability to update the quantity of resources available.
  - A way to quickly view a list of resources that are below the required level.
- Editing user information
  - A way to change the user's password

Core Objectives

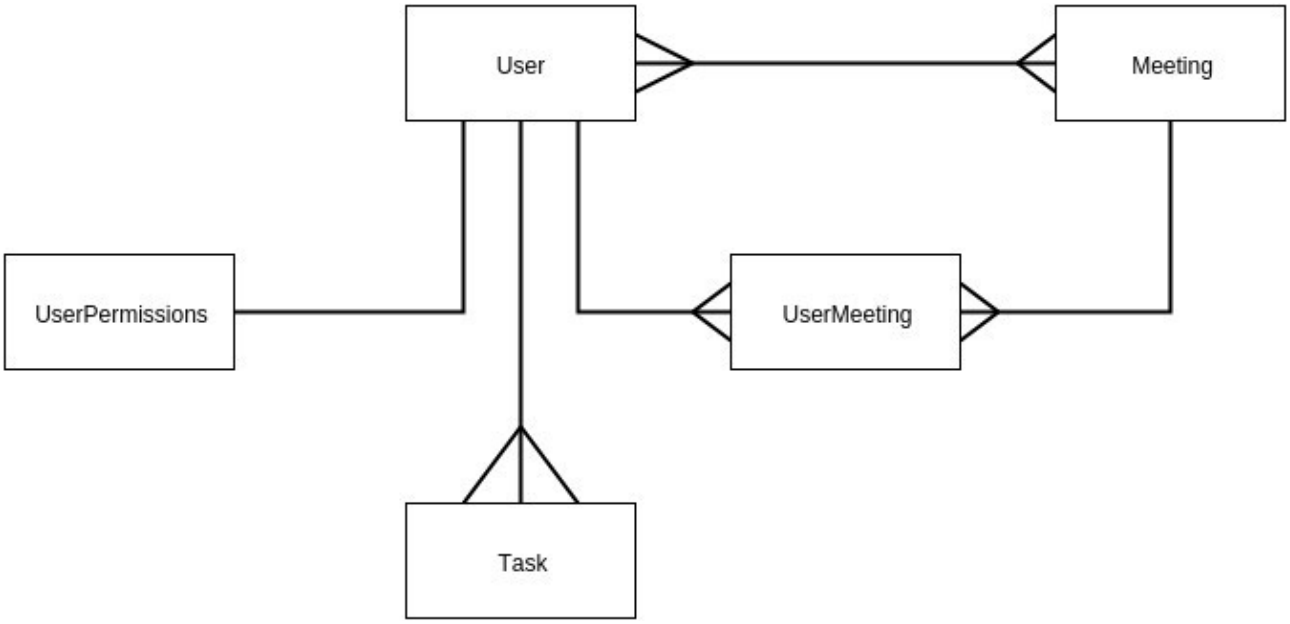
- Meetings viewing/adding

- Tasks viewing/adding
- Monitoring Resources

Other Objectives

- Editing user data

E-R Diagrams & Descriptions



Entity Descriptions:

User(UserID, Username, UserFirstname, UserLastname, UserPasswordHash, Permissions)

Meeting(MeetingID, MeetingOwner, MeetingTitle, MeetingDateTime, MeetingPlace)

MeetingAttendee(UserID, MeetingID, UserMeetingConfirmation)

Task(TaskID, TaskTitle, TaskDescription, TaskOwner, TaskExpiry, Priority)

Resource(ResourceID, ResourceName, ResourceCost, ResourceQuantity, ResourceRequiredQuantity)

Object Analysis

Object Listing

- Meeting
- Task
- User

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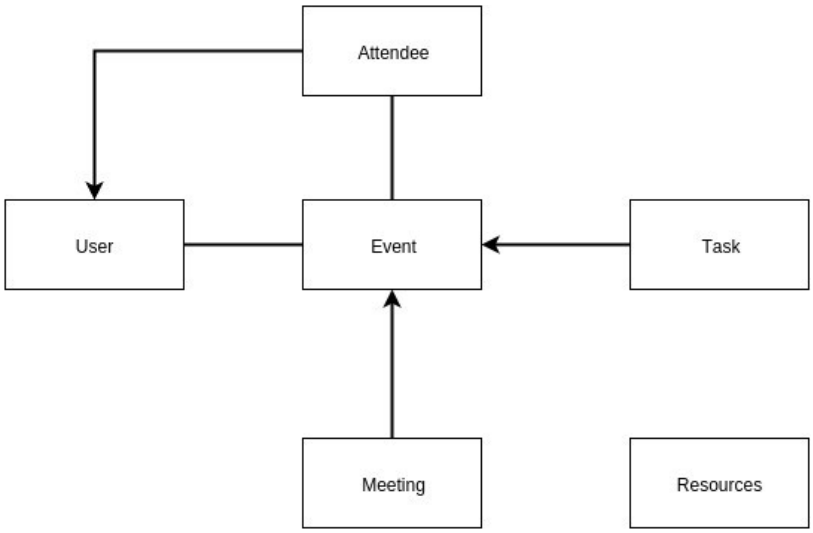
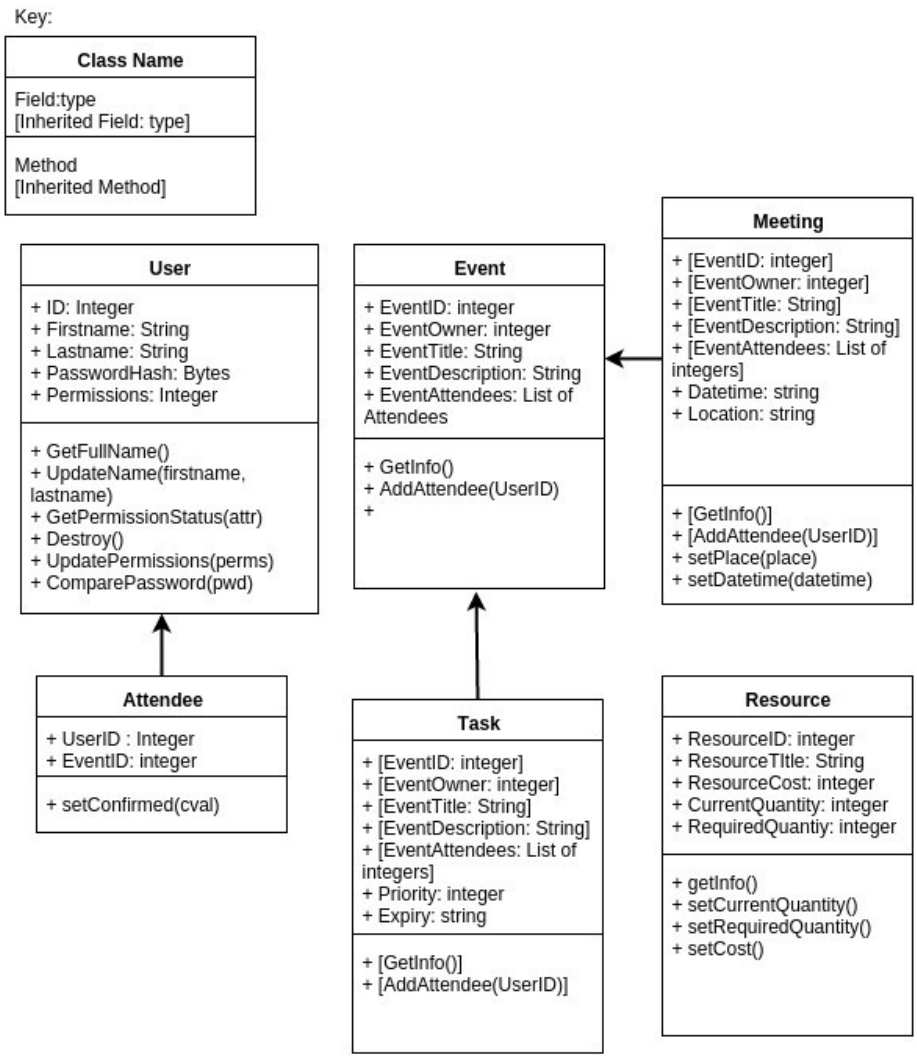
- Resources

Relationship Diagrams



Class Definitions



Other Abstractions

Constraints

Hardware

The Church currently uses a variety of low-spec PCs and Apple iMacs, the proposed system does not require and particularly high performance hardware to execute it's various tasks, however it does have some dependencies which might not be present on older computers.

The lowest specification compute that is still used in the Church has these specifications:

- 15” 4:3 Display
- Intel® Pentium 2.13GHz (Mid 2009)
- 2Gib DDR2 Ram
- 100MBit NIC
- 60GB Hard Disk Drive
- Integrated Graphics

The proposed system will not require computational resources beyond this computer. Maybe when the database gets large, the users may notice a slight delay in the computer accessing the database, but the effects should be negligible.

The staff team uses a variety of Laptops and Desktops all connected to a central server which shares some files and resources between the different computers, the database file for the proposed system is going to be stored on this server so the users will have to be connected to the Church's local network for the proposed system to work.

Software

Some of the users of the system are not trained to use computers and may be disorientated by radical changes to a computer system such as changing the operating system, however Python, and the PyQt library that the proposed system will be using are cross platform and will work on Windows, Mac and Linux.

Time

The only deadline for this software is the January 2016 deadline set by my teacher. There is no rush as far as the Church is concerned.

User Knowledge

None of the members of the staff team have qualifications in ICT or computing related subjects and there is no corporate scheme to train the staff team. Beyond basic word processing and dealing with emails, the staff team has little or no knowledge of computers which is why it's essential for the software to be as familiar and logical as possible, as well as being supplied with a full user manual.

Access Restrictions

Each user of the system needs their own section that contains all of their data, which will be password protected.

Due to the sensitive nature of much of the data held within the system, the administration will have to carefully consider how they will comply with the data protection act with the storage of their database file.

Limitations

Areas to be included in future computerisation

An extension to the system could be developed to replace the checkout element of the cafe which would automatically update resources and it would be able to keep financial records and report them to the cafe management on a regular basis, this would completely cut out the time required to input the updates to the sales information at the end of the day, and it would give the management live insights into the operation of the cafe.

Solutions

Alternative Solutions

Solution	Advantages	Disadvantages
Custom set of spreadsheets	Does not require bespoke software	does not store data securely, does not organise data, difficult to share information between people. No support for notifications
“Webapp”	Cloud resource, accessible anywhere from any device, off-site backups & server resources. Support can be issued remotely	Has a regular service charge, a web based application is open to everyone in the world therefore the application must be secure.
Revising the current system	Very low cost, no external contractors required, no need to retrain and/or learn new skills.	All of the current problems will still exist, management of data becomes a manual and laborious task.
Command Line application (CLA)	Quicker and easier to program, most storage and processing efficient solution	Requires significant training and documentation. Most of the users working for the client have little or no computer experience therefore a command line application would be completely foreign to them and would probably scare them away from using it.
Desktop application with GUI	Can be written in Python so all of the core code will be the same as in a CLA, except it will have a GUI to operate those functions. Layout can be easy to use and can include easy to reach help at every point of	GUIs are more time consuming to program than CLAs as the layout of the UI requires significant design process. Also rendering and operating GUI requires more processing than a CLA.

Solution	Advantages	Disadvantages
	entry. Could be used with a touch screen for ease of use.	

I have chosen a python GUI desktop application because:

- The application will meet my client's specific needs in a user friendly way that cannot accidentally be changed, unlike a spreadsheet.
- The digital storage of the user's data will fit on existing hardware.
- All the data contained in the database can be easily backed up and restored.
- The GUI has all of the advanced features of the CLA but they are more easily accessible.
- The python language has a balance programming simplicity and computing versatility that make it perfect applications such as these, when there's a relatively small time frame but the task requires some advanced features.

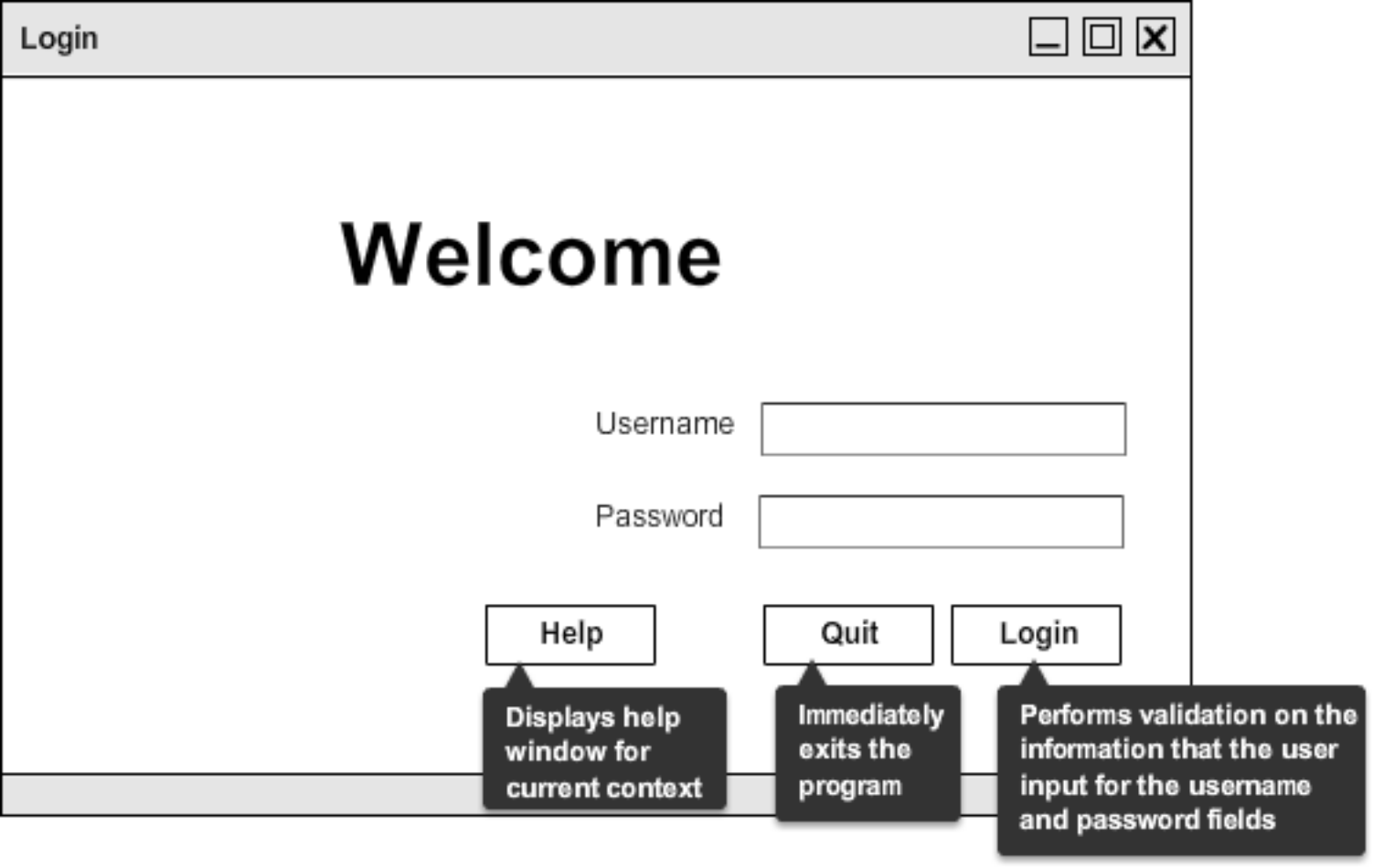
Design

Short Description of the Main Parts of the System

The system contains three main elements: The subsystem for managing meetings, the subsystem for managing referral tickets and the subsystem for managing resources and accounting. The meeting management subsystem will contain a record of all the meetings for each member of the staff team, therefore as part of the global system, there will be a representation of the staff team and anyone who might be involved in any meetings. This subsystem will also be responsible for the reminding the users of their meetings and informing users when they've been invited to a meeting. The next subsystem is the system for managing support and referral tickets, this will automatically pass the ticket on to whoever is on the rota to deal with that ticket at the given time. The tickets will be listed in order of priority, which is set when they're submitted, the priority will increase with time to ensure that nothing is ignored for too long as often the issues that would be reported are very time sensitive. The tickets will be kept securely in an encrypted section of the database, and each individual ticket will only be accessible by people for whom it is relevant to ensure confidentiality and compliance with various laws concerning such information. The third subsystem, designed for managing the material resources within the Church will consist of a record of all of the finite resources that the Church regularly purchases and sells, the subsystem will also keep track of the money throughput. Because many of the people who would operate this system will not be trained nor contractually obliged to give a satisfactory quality of service, the security and access rights components of the system are of paramount importance, not only to prevent breaches in confidentiality but also to ensure that nobody is confused when the interface is more complicated than necessary therefore the system needs to determine which parts of the system are relevant to a particular person and only show them those parts.

Flowchart showing overview of the entire system

User Interface Design


Login
Welcome
Username
Password
Help
Quit
Login
Displays help window for current context
Immediately exits the program
Performs validation on the information that the user input for the username and password fields

Home

?

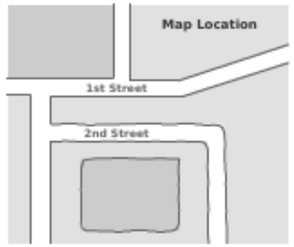
Logout

Meetings | Tasks Referrals | Resources | User Management

Outstanding Meetings

Meeting With Steve

12:30 PM
Midsummer Common



- Staff Team Meeting
- Café Management Meeting
- Dinner With The Smiths
- Bi-Weekly Management Meeting
- Weekly Prayer

Expandable list of pending meetings, data comes from database and is updated once every 30 seconds

New Appointment

Respond to Pending Appointments

New Appointment

Title of event:

Attendees:

Location:

August 2009

S M T W T F S

1

On change: perform some validation and username completion based on `users` table

Validated and must be in a format compatible with GMaps

Cancel | Save

Creats a new entry in the meetings database table

Respond to Appointments

- Meeting With Dave
- Staff Team Meeting
- Coffee with Sue
- Other Stuff

Used to select the meeting to respond to, the list comes from the database of meetings for this user that have not already happened and are prioritized depending on if the user has already responded to them

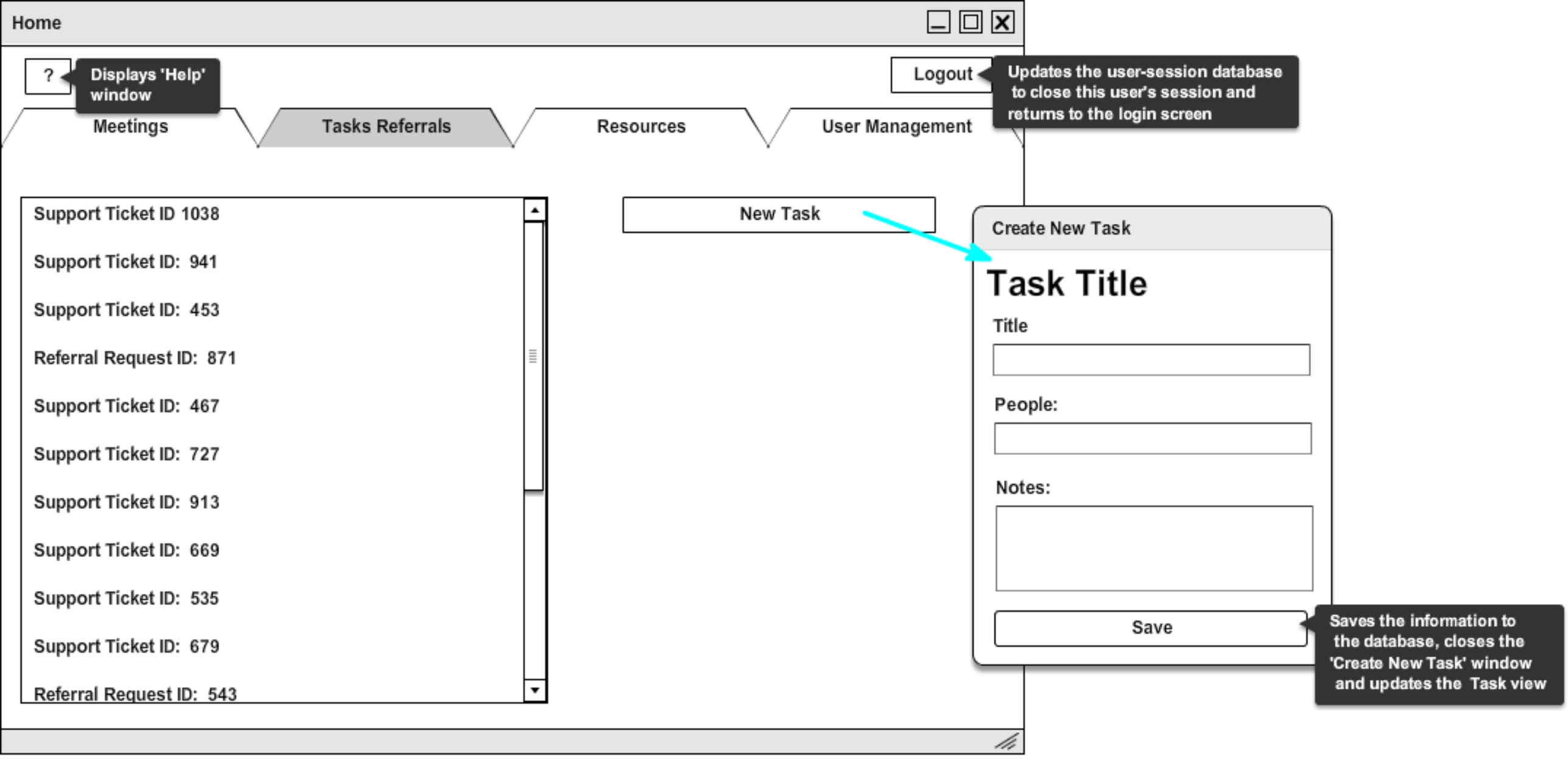
Staff Team Meeting

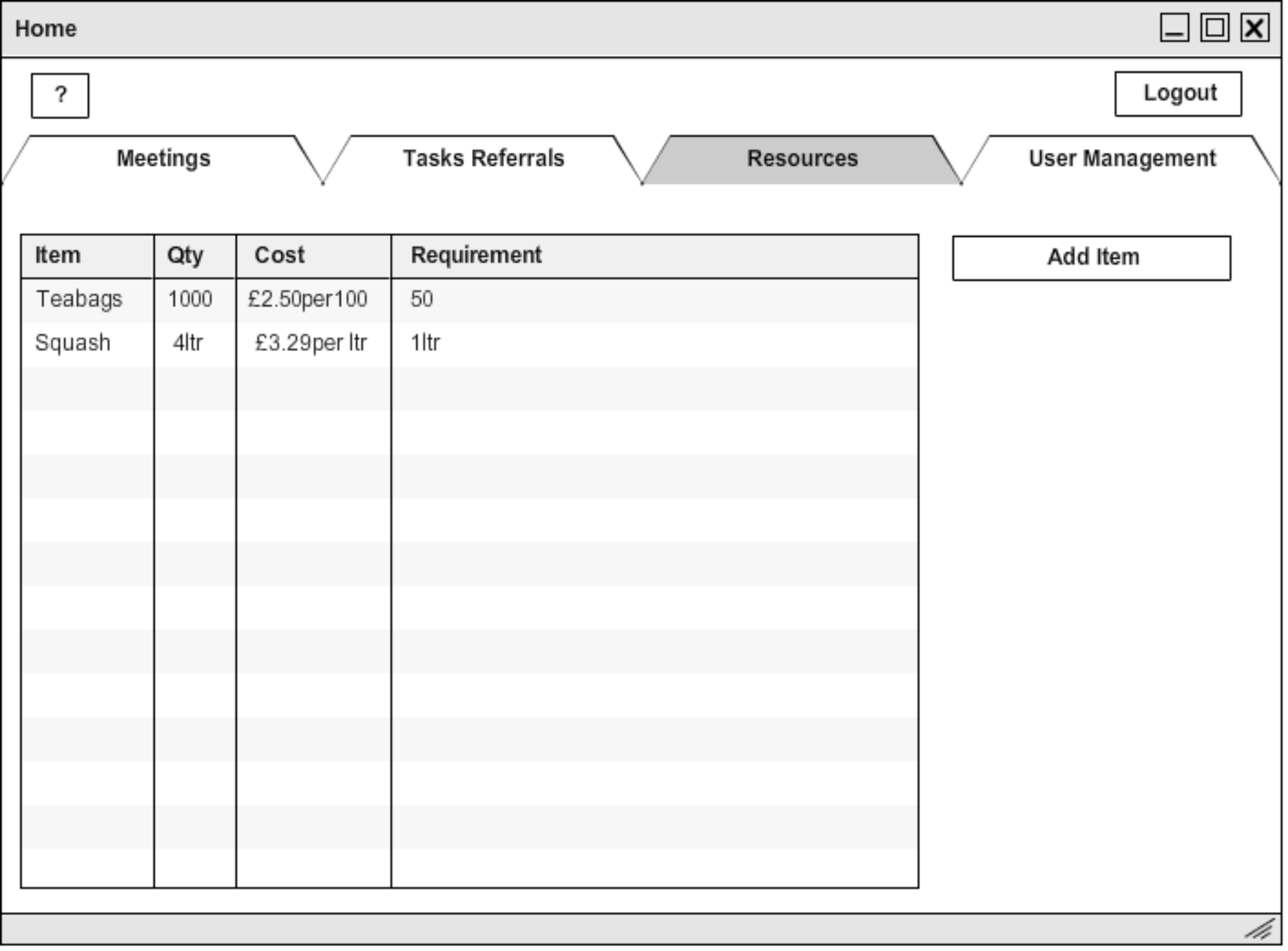
Attending?

Contains "Yes", "No", and "Tentative"

Cancel | Save

Updates the selected meeting entry in the database


Home
?
Displays 'Help' window
Logout
Updates the user-session database to close this user's session and returns to the login screen
Meetings
Tasks Referrals
Resources
User Management
Support Ticket ID 1038
Support Ticket ID: 941
Support Ticket ID: 453
Referral Request ID: 871
Support Ticket ID: 467
Support Ticket ID: 727
Support Ticket ID: 913
Support Ticket ID: 669
Support Ticket ID: 535
Support Ticket ID: 679
Referral Request ID: 543
New Task
Create New Task
Task Title
Title
People:
Notes:
Save
Saves the information to the database, closes the 'Create New Task' window and updates the Task view


Home
?
Logout
Meetings
Tasks Referrals
Resources
User Management
Item
Qty
Cost
Requirement
Teabags
1000
£2.50per100
50
Squash
4ltr
£3.29per ltr
1ltr
Add Item

Code Listing

```
# file - Meetings.py - 49 lines
# Meetings.py - Class definition for use with meetings stuff

from GlobalResources import *
from DatabaseInit import MeetingsInfo, UsersInfo

class Meeting:
	def __init__(self, title="[Blank Meeting]", place="[Nowhere]", attendees=["[Demo Person 1]", "[Demo Person 2]"], when="[Sometime]", meeting_id=1):
		#Attendees to be a list of people objects

		self.title = title
		self.place = place
		self.attendees = attendees
		self.when = when
		self.meeting_id = meeting_id

		self.info = {"Title":title, "Location":place, "Attendees":attendees, "ISOTime":when, "MeetingID":meeting_id}

		self.load_meeting_from_database()

		self._update_info()

	def load_meeting_from_database(self, info=None):
		#provide functionality to get an individual meeting from a database.


		if info == None:
			info = self.info

		dbmeeting = MeetingsInfo(info)

		raw_info = dbmeeting.get_meeting_info()
		self.info = {"Title":raw_info[2], "Location":raw_info[4], "ISOTime":raw_info[3], "MeetingID":raw_info[0], "OwnerID":raw_info[1]}

	def _update_info(self):
		self.title = self.info["Title"]
		self.place = self.info["Location"]
		self.attendees = [] # this'll be the entry point for the DB query
		self._get_attendees_from_database()
		self.when = self.info["ISOTime"]
		self.meeting_id = self.info["MeetingID"]

	def _get_attendees_from_database(self):
		attendees = MeetingsInfo().get_meeting_attendees(self.meeting_id)

		for a in attendees:
```

```
                attendee_id = a[0]
                # Lookup the username
                username = UsersInfo().get_username_by_uid(attendee_id)
                self.attendees.append(username)
# file - setup.py - 30 lines
# This is the setup script which will install the software package into the
# wherever it's meant to be.

import sys, uuid, random, os
import httplib

Dependancies = True

# Check that the user has PyQt installed
try:
    import PyQt4.QtCore
except ImportError:
    print("You do not have the correct version of PyQt installed :(")
    Depedancies = False
    # TODO: Automatically download the PyQt installation file for the
    # detected OS

# Check that the user has access to SQLite

try:
    import sqlite3
except ImportError:
    print("You are unable to use databases because you're a spaz")
    Dependancies = False

# The dependencies checks are done, now for the

if Dependancies:
    pass
# TODO: Implement the PyPacker code to unpack the squashed project code.
# file - NewResourceDialog.py - 27 lines
from DatabaseInit import ResourcesInfo
from PyQt4 import QtCore, QtGui
from GlobalResources import *

class NewResourceDialog(QDialog):
    def __init__(self, user):
        super().__init__()

        self.setWindowTitle("Add a Resource")
        self.layout = QVBoxLayout()

        self.title = QLabel("Add a resource")
        self.title.setFont(GTitleFont)
        self.layout.addWidget(self.title)

        self.name_label = QLabel("Resource Name:")
        self.layout.addWidget(self.name_label)
```

```
            self.name_input = QLineEdit()
            self.layout.addWidget(self.name_input)

            self.cost_input = QLineEdit()
            self.layout.addWidget(self.cost_input)

            self.current_quantity = QLineEdit()
            self.layout.addWidget(self.current_quantity)
            self.setLayout(self.layout)
# file - NewMeetingDialog.py - 119 lines
# New Meeting Dialog

import re

from PyQt4.QtCore import *
from PyQt4.QtGui import *

from GlobalResources import *
from DatabaseInit import *
from UsernameLookupDialog import *

class NewMeetingDialog(QDialog):
    def __init__(self, user = None):
            super().__init__()
            self.user = user
            self.main_layout = QVBoxLayout()

            self.setWindowTitle("Add New Meeting")

            self.title = QLabel("Add New Meeting")
            self.title.setFont(GTitleFont)
            self.main_layout.addWidget(self.title)


            self.meeting_title_label = QLabel("Meeting Title:")
            self.main_layout.addWidget(self.meeting_title_label)
            self.meeting_title_entry = QLineEdit()
            self.main_layout.addWidget(self.meeting_title_entry)

            self.attendees_label = QLabel("Attendees:")
            self.main_layout.addWidget(self.attendees_label)

            self.attendees_container = QWidget()
            self.attendees_layout = QHBoxLayout()

            self.attendees_entry = QLineEdit()
            self.attendees_layout.addWidget(self.attendees_entry)
            # self.attendees_entry.textChanged.connect(self._add_attendees)

            self.username_lookup_button = QPushButton("...")
            self.username_lookup_button.setFixedWidth(30)
            self.username_lookup_button.clicked.connect(self.show_username_lookup)
            self.attendees_layout.addWidget(self.username_lookup_button)
```

```
        self.attendees_container.setLayout(self.attendees_layout)
        self.main_layout.addWidget(self.attendees_container)
        self.attendees_info_label = QLabel("A list of usernames seperated by semicolons")
        self.attendees_info_label.setFont(GSmallText)


        self.where_label = QLabel("Where")
        self.main_layout.addWidget(self.where_label)
        self.where_entry = QLineEdit()
        self.main_layout.addWidget(self.where_entry)

        self.when_label = QLabel("When")
        self.main_layout.addWidget(self.when_label)
        self.when_entry = QDateTimeEdit()
        self.when_entry.setMinimumDate(QDate.currentDate())
        self.when_entry.setMinimumTime(QTime.currentTime())
        self.main_layout.addWidget(self.when_entry)

        self.button_container_widget = QWidget()
        self.button_container_layout = QHBoxLayout()

        self.save_button = QPushButton("Save")
        self.save_button.clicked.connect(self.add_meeting)
        self.button_container_layout.addWidget(self.save_button)
        self.cancel_button = QPushButton("Cancel")
        self.cancel_button.clicked.connect(self.close)
        self.button_container_layout.addWidget(self.cancel_button)

        self.button_container_widget.setLayout(self.button_container_layout)
        self.main_layout.addWidget(self.button_container_widget)

        self.setLayout(self.main_layout)


    def add_meeting(self):
        info = {"OwnerID": self.user.id, # This is where to do the username lookup
                "Title":self.meeting_title_entry.text(),
                "ISOTime":self.when_entry.text(),
                "Location":self.where_entry.text()
        }
        meeting = MeetingsInfo(info)
        meeting.add_meeting()
        if self._add_attendees(meeting):
            pass
        self.close()

    def _add_attendees(self, meeting):
        valid = True
        raw_attendee_list = self.attendees_entry.text()
        #Parse this into a list of attendees, seperated by eiter semicolons or commas.
        pattern = re.compile("([a-zA-Z]+;?)")
        # Iterate through the list of attendees
        print(pattern.findall(raw_attendee_list))
```

```
            for string in pattern.findall(raw_attendee_list):

                if string[-1] == ";":
                    string = string[0:-1]
                try:
                    attendeeID = UsersInfo().get_uid_by_username(string)
                except IndexError:
                    print("[WARN] Username '{0}' not recognised".format(string))
                    attendeeID = 0
                    valid = False
                    # Show a warning dialog and prevent the form from completing.
                if attendeeID:
                    meeting.add_meeting_attendee(attendeeID)
            return valid

        def show_username_lookup(self):
            u = UsernameLookup(self)
            #u.show()
            #u.raise_()
            u.exec_()
# file - MainScreenGui_DiaryView.py - 143 lines
from PyQt4.QtCore import *
from PyQt4.QtGui import *

from GlobalResources import *

from MeetingWidget import *
from NewMeetingDialog import *
from Meetings import Meeting
from RespondToPendingRequestsDialog import *
from IndicatorBadge import *

class DiaryView(QWidget):
    def __init__(self, user = None):
        super().__init__()
        self.user = user
        print("[INFO] Created MainScreenGuiDiaryView")

        self.main_layout = QVBoxLayout()

        self.title = QLabel("Upcoming Meetings & Appointments")
        self.title.setFont(GTitleFont)

        self.main_layout.addWidget(self.title)

        self.middle_widget = QWidget()
        self.middle_layout = QHBoxLayout()

        # Define the left-side stuff
        self.left_side_widget = QWidget()
        self.left_side_layout = QVBoxLayout()

        self.meetings_widget = QWidget()
```

```
            self.meetings_layout = QVBoxLayout()

            # Start to do a slightly more indepth meetings code
            # Get meetings from the database
            # Enumerate these meetings
            # have an array of meetingss objects

            # #Get a list of meetings
            # self.meetings_list = MeetingsInfo(None).get_meetings_by_owner(user.id)
            # print("{0} Meeting(s) found.".format(len(self.meetings_list)))
            # self.meetings_widgets = []
            # for m in self.meetings_list:
            #     self.meetings_widgets.append(MeetingOverview(Meeting(meeting_id=m[0])))
            #     self.meetings_layout.addWidget(self.meetings_widgets[-1])

            self.meetings_widget.setLayout(self.meetings_layout)
            #self.meetings_widget.setMinimumSize(300, 700)


            self.meetings_container_widget = QScrollArea()
            self.meetings_container_widget.setWidget(self.meetings_widget)
            self.meetings_container_widget.setVerticalScrollBarPolicy(2)
            self.left_side_layout.addWidget(self.meetings_container_widget)

            self.left_side_widget.setLayout(self.left_side_layout)
            self.middle_layout.addWidget(self.left_side_widget)

            # End of left side
            # Define the right side stuff

            self.right_side_widget = QWidget()
            self.right_side_layout = QVBoxLayout()#

            # Right side widgets...
            self.button_container = QWidget()
            self.button_container_layout = QVBoxLayout()

            self.add_new_appointment_button = QPushButton("New Appointment")
            self.add_new_appointment_button.clicked.connect(self.display_new_meeting_dialog)
            self.button_container_layout.addWidget(self.add_new_appointment_button)

            # TODO: Add some kind of indicator to show the amound of unread pending
meetings

            self.response_container = QWidget()
            self.response_layout = QHBoxLayout()

            self.respond_to_pending_appointments_button = QPushButton("Respond to Pending
Appointments")

self.respond_to_pending_appointments_button.clicked.connect(self.display_respond_to_meetin
gs_dialog)
            self.respond_to_pending_appointments_button.setFixedHeight(30)
            self.response_layout.addWidget(self.respond_to_pending_appointments_button)
```

```
            self.pending_number =
Indicator(len(MeetingsInfo().get_outstanding_meetings(self.user.id)))
            self.response_layout.addWidget(self.pending_number)

            self.response_container.setLayout(self.response_layout)
            self.button_container_layout.addWidget(self.response_container)

            self.button_container.setLayout(self.button_container_layout)
            self.right_side_layout.addWidget(self.button_container)

            self.spacer1 = QLabel(" ")
            self.spacer1.setFixedHeight(270)
            self.right_side_layout.addWidget(self.spacer1)


            self.right_side_widget.setLayout(self.right_side_layout)
            self.middle_layout.addWidget(self.right_side_widget)

            self.middle_widget.setLayout(self.middle_layout)
            self.main_layout.addWidget(self.middle_widget)
            self.setLayout(self.main_layout)

            # Update the list of meetings
            self._update_meeting_list()


        def _update_meeting_list(self):

            # This needs to be re-written so it works.

            # Remove all widgets
            for index in range(self.meetings_layout.count()):
                self.meetings_layout.removeItem(self.meetings_layout.itemAt(index))
            self.meetings_layout.update()
            # Start to do a slightly more indepth meetings code
            # Get meetings from the database
            # Enumerate these meetings
            # have an array of meetingss objects

            #Get a list of meetings
            self.meetings_list = MeetingsInfo(None).get_meetings_by_owner(self.user.id)
            print("{0} Meeting(s) found.".format(len(self.meetings_list)))
            self.meetings_widgets = []
            for m in self.meetings_list:
                self.meetings_widgets.append(MeetingOverview(Meeting(meeting_id=m[0])))
                self.meetings_layout.addWidget(self.meetings_widgets[-1])
            self.meetings_layout.update()

self.pending_number.update(len(MeetingsInfo().get_outstanding_meetings(self.user.id)))



        def display_new_meeting_dialog(self):
```

```
            new_meeting_dialog = NewMeetingDialog(self.user)
            new_meeting_dialog.show()
            new_meeting_dialog.exec_()
            self._update_meeting_list()

        def display_respond_to_meetings_dialog(self):
            respond_to_meetings_dialog = RespondToPendingMeetingDialog(self.user)
            respond_to_meetings_dialog.exec_()
            self._update_meeting_list()
# file - GlobalResources.py - 16 lines
# Global resources

from PyQt4.QtCore import *
from PyQt4.QtGui import *

from LoginAction import User

GTitleFont = QFont("Segoe UI Light", 24)
#GTitleFont.setHintingPreference(QFont.PreferFullHinting)
GTitleFont.setStyleStrategy(QFont.PreferAntialias)
GBodyFont = QFont("Segoe UI Light", 12)
GBodyFont.setStyleStrategy(QFont.PreferAntialias)
GSmallText = QFont("Segoe UI Light", 10)
GSmallText.setStyleStrategy(QFont.PreferAntialias)

# userinfo = User()
# file - LoginScreenGui.py - 178 lines
import sys

# import Qt depenencies
from PyQt4.QtCore import *
from PyQt4.QtGui import *

from MainScreenGui import *
from GlobalResources import *

from LoginAction import *
from DatabaseInit import *

class PasswordWarningDialog(QDialog):
    def __init__(self, errormsg="", buttonmsg="Dismiss"):
        super().__init__()
        self.setModal(True)
        print("[INFO] Created Password Warning Dialog")

        self.setWindowTitle("Access Denied")

        self.main_layout = QVBoxLayout()

        self.title = QLabel("Access Denied")
        self.title.setFont(GTitleFont)
        self.main_layout.addWidget(self.title)

        self.text = QLabel(errormsg)
```

```
            self.text.setFont(GBodyFont)
            self.main_layout.addWidget(self.text)

            self.dismiss_button = QPushButton(buttonmsg)
            self.dismiss_button.clicked.connect(lambda: self.close())
            self.main_layout.addWidget(self.dismiss_button)

            self.subtext = QLabel("If the problem persists, please contact the system
administrator.")
            self.subtext.setFont(GSmallText)
            self.main_layout.addWidget(self.subtext)

            self.setLayout(self.main_layout)

class LoginWindow(QDialog):
    def __init__(self):
            super().__init__()
            print("[INFO] Created Login window")

            self.setWindowTitle("[CMS] Login")

            self.main_title = QLabel("Welcome.")


            self.main_title.setFont(GTitleFont)

            # Create a labeled username feild:

            self.username_item = QWidget()

            self.username_layout = QHBoxLayout()


            self.username_label = QLabel("Username:")
            self.username_label.setFont(GBodyFont)
            self.username_label.setFixedWidth(150)

            self.username_input = QLineEdit()

            self.username_input.setWhatsThis("Enter your username here:")

            self.username_layout.addWidget(self.username_label)
            self.username_layout.addWidget(self.username_input)

            self.username_item.setLayout(self.username_layout)


            # Create a password feild

            self.password_item = QWidget()

            self.password_layout = QHBoxLayout()

            self.password_label = QLabel("Password:")
```

```
        self.password_label.setFont(GBodyFont)
        self.password_label.setFixedWidth(150)

        self.password_input = QLineEdit()
        self.password_input.setEchoMode(QLineEdit.Password)
        self.password_input.returnPressed.connect(self._enter_submit)

        self.password_input.setWhatsThis("Enter your password here")

        self.password_layout.addWidget(self.password_label)
        self.password_layout.addWidget(self.password_input)

        self.password_item.setLayout(self.password_layout)

        self.button_layout = QHBoxLayout()

        self.submit_button = QPushButton("Login")
        self.submit_button.clicked.connect(self.login_action)
        self.submit_button.setDefault(True)

        self.help_button = QPushButton("?")
        self.help_button.setFixedWidth(30)

        self.quit_button = QPushButton("Quit")

        self.button_layout.addWidget(self.submit_button)

        self.button_layout.addWidget(self.help_button)
        self.button_layout.addWidget(self.quit_button)

        # Add actions to the buttons within buttons_widget

        self.quit_button.clicked.connect(lambda: sys.exit(1))

        self.buttons_widget = QWidget()
        self.buttons_widget.setFixedWidth(300)
        self.buttons_widget.setLayout(self.button_layout)

        self.layout = QVBoxLayout()

        self.layout.addWidget(self.main_title)
        self.layout.addWidget(self.username_item)
        self.layout.addWidget(self.password_item)
        self.layout.addWidget(self.buttons_widget)

        self.setLayout(self.layout)
        self.setFont(GBodyFont)

        self.setFixedWidth(600)

    def _show_error_dialog(self, text="", button="Dismiss"):
        er = PasswordWarningDialog(text, button)
        er.show()
        er.raise_()
```

```
            er.exec_()

        def login_action(self, e = None):
            try:
                # Get  the user's id
                userid = UsersInfo().get_uid_by_username(self.username_input.text())

                # Create a User object with data related to the current userid
                user = User(userid) # User - class defined in LoginAction.py

                # If the hash of the input password does not match the stored hash
                if not user.password_hash_cmp(self.password_input.text()):

                    # Show the warning dialog
                    self._show_error_dialog("Password not recognised")
                    # End the execution of the function.
                    return 0

                else:

                    # Create and run an instance of the MainScreen GUI.
                    self.main_screen = MainScreen(user, self)
                    self.main_screen.show()
                    self.main_screen.raise_()

                    # Hide this window.
                    self.hide()

            # If the search for the useername does not return any results:
            except IndexError:
                self._show_error_dialog("Username not recognised")


        def reset(self):

            # Set both the input fields to ""
            self.password_input.setText("")
            self.username_input.setText("")


        # Event handler for pressing enter key.
        def _enter_submit(self, e = None):

            self.login_action(self)
    # file - MainScreenGui_ResourcesView.py - 83 lines
    from PyQt4.QtCore import *
    from PyQt4.QtGui import *

    from GlobalResources import *
    from DatabaseInit import ResourcesInfo
    from NewResourceDialog import *


    class ResourcesView(QWidget):
```

```
    def __init__(self, user):

        # `user` - reference to instance created in
        self.user = user
        super().__init__()

        print("[INFO] Created ResourcesView")

        self.main_layout = QVBoxLayout()

        self.title =  QLabel("Resources")
        self.title.setFont(GTitleFont)
        self.main_layout.addWidget(self.title)

        self.pane_container = QWidget()
        self.pane_container_layout = QHBoxLayout()

        self.left_pane_container = QWidget()
        self.left_pane_layout = QVBoxLayout()


        self.table = QTableWidget(3, 4)
        self.table.setHorizontalHeaderLabels(["Name", "Cost", "Quantity", "Quantity
Needed"])
        for col in range(4):
            self.table.setColumnWidth(col, 580/4)
        self.table.setFixedSize(601, 400)
        self.left_pane_layout.addWidget(self.table)
        self.update_table()
        # This is where I'll define the tabular view.
        # there also needs to be some code for getting sections of information
        # from the database - otherwise it won't work.

        self.left_pane_container.setLayout(self.left_pane_layout)
        self.pane_container_layout.addWidget(self.left_pane_container)
        self.right_pane_container = QWidget()
        self.right_pane_layout = QVBoxLayout()

        self.add_items_button = QPushButton("Add Resource")
        self.right_pane_layout.addWidget(self.add_items_button)
        self.add_items_button.clicked.connect(self._open_new_resource_dialog)
        self.edit_resource_button = QPushButton("Edit Resource")
        self.right_pane_layout.addWidget(self.edit_resource_button)
        self.view_urgent_requirements_button = QPushButton("View urgent requirements")
        self.right_pane_layout.addWidget(self.view_urgent_requirements_button)

        self.right_pane_container.setLayout(self.right_pane_layout)
        self.pane_container_layout.addWidget(self.right_pane_container)

        self.pane_container.setLayout(self.pane_container_layout)
        self.main_layout.addWidget(self.pane_container)


        self.setLayout(self.main_layout)
```

```
    def _open_new_resource_dialog(self):
        dg = NewResourceDialog(self.user)
        dg.show()
        dg.exec_()

    def update_table(self):
        self.table.clear()

        # Get information from database

        raw_data = ResourcesInfo().get_all_resources()

        # Table dimentions
        x_total = self.table.columnCount()
        y_total = len(raw_data)
        self.table.setRowCount(y_total)
        self.table.setHorizontalHeaderLabels(["Name", "Cost", "Quantity", "Quantity
Needed"])
        for x in range(x_total):
            for y in range(y_total):
                self.table.setItem(y, x, QTableWidgetItem(str(raw_data[y][x+1])))
# file - compile.py - 87 lines
# PyPackager - a simple utility designed to compile and decompile a set of
# python files.

# Program stages
# Iterate through a python file, searching for import statements
# get the module name from those statements and check if it's in the
# module's directory
# open that file & find repeat the process

# once a list of filenames (&paths)  has been collected,
# open the files
# remove whitespace and comments
# (maybe) rename the variables to one or two character names
# write the squashed code to a (binary?) file or database ready for
# extraction

import os, sys
import re as regex

def parse_file(file_data, filenames_set):
        pattern = regex.compile("from +[a-zA-Z\_]* import +[a-zA-Z\*]*\n")
        for string in pattern.findall(file_data):
                filename = string[string.find(" ")+1:string.find(" ", string.find(" ")+1)]+".py"
                filenames_set.add(filename)
                parse_file(open(filename).read(), filenames_set)
                del filename
        pattern = regex.compile("import +[a-zA-Z\_]*\n")
        for string in pattern.findall(file_data):
                # find all the instances where the user uses import not from
                # whatever import class
                # This will also include all the imports of builtin classes
```

```
                    # so we're going to have to do some error handling! yay
                    filename = string[string.find(" ")+1:-1]+".py"
                    try:
                            open(filename)
                            filenames_set.add(filename)
                            parse_file(open(filename).read(), filenames_set)
                    except FileNotFoundError:
                            pass
def squash_file(filename):
        # returns a string of the squashed file
        f = open(filename)
        lines = f.readlines()
        f.close()
        outlines = ['@@@{0}@@@\n'.format(filename)]
        for l in lines:
                tmpl = l.strip()
                if tmpl == "":
                        pass
                elif tmpl[0] == "#":
                        pass
                else:
                        outlines+=l
        return "".join(outlines)
def conjoin_files(filenames_set):
        # returns a string of the conjoined file
        outfiles = []
        for f in filenames_set:
                outfiles.append(squash_file(f))
        return "\n".join(outfiles)

def unconjoin_files(conjoined_file_data):
        # creates a directory containing the various files that have been squashed
        inlines = conjoined_file_data.split("\n")
        startline, endline, alternator = 0, 0, False

        outfiles = []
        startlines = []

        for index, line in enumerate(inlines):
                if line[:3] == "@@@":
                        filename = line[3:line.find("@@@", 4)]
                        startlines.append(index)

        print("len slines:", len(startlines))
print(squash_file("main.py"))
#Testing stuff
filenames_set = {"main.py"}
f = open("main.py")
parse_file(f.read(), filenames_set)
print(filenames_set)
print(len(filenames_set))
for f in filenames_set:
        print(f)
c = conjoin_files(filenames_set)
```

```
print(c, file=open("allc.py", "w"))
unconjoin_files(c)
# file - main.py - 38 lines
#! /usr/bin/env python3
# import core depenencies
import sys, time, random

# import Qt depenencies
from PyQt4.QtCore import *
from PyQt4.QtGui import *

# import custom classes
from LoginScreenGui import LoginWindow
from DatabaseInit import UsersInfo


# Main Program

def main():

    print("[INFO] System Startup")

    print("[INFO] Initiate UsersInfo database table")
    u = UsersInfo()

    application = QApplication(sys.argv)
    login_window = LoginWindow()


    login_window.show()
    login_window.raise_()

    application.exec_()


    print("[INFO] Execution complete")


if __name__ == "__main__":
    # Launch the application.
    main()
# file - MainScreenGui_UserAdminView.py - 85 lines
from PyQt4.QtCore import *
from PyQt4.QtGui import *

from LoginAction import User
from GlobalResources import *

from ChangePasswordDialog import *

class UserOverview(QGroupBox):
    def __init__(self, user):
        self.user = user
        super().__init__()
```

```
            self.layout = QVBoxLayout()

            self.username_label = QLabel(user.info["Name"])
            self.username_label.setFont(GTitleFont)
            self.layout.addWidget(self.username_label)
            # Maybe add an image to represent the user's privelleges

            self.priv_label = QLabel("Standard User")
            self.priv_label.setFont(GSmallText)
            self.layout.addWidget(self.priv_label)

            self.control_bar = QWidget()
            self.controls_layout = QHBoxLayout()

            #Controls:
            # self.rename_button = QPushButton("Change Name")
            # self.controls_layout.addWidget(self.rename_button)
            # self.rename_button.setDisabled(not self.user.permissions["ChangeOwnData"])

            self.change_password_button = QPushButton("Change Password")
            self.controls_layout.addWidget(self.change_password_button)
            self.change_password_button.clicked.connect(self._show_change_password_window)
            self.change_password_button.setDisabled(not
self.user.permissions["ChangeOwnData"])
            print(not self.user.permissions["ChangeOwnData"])
            print(self.user.permissions)

            self.control_bar.setLayout(self.controls_layout)
            self.control_bar.setFixedWidth(300)
            self.control_bar.setFont(GSmallText)
            self.layout.addWidget(self.control_bar)

            self.setLayout(self.layout)
            self.setFixedHeight(160)
            self.setTitle("Me")

        def _show_change_password_window(self):
            pwdwindow = ChangePasswordDialog(self.user)

            pwdwindow.show()
            pwdwindow.exec_()

class UserAdminView(QWidget):
        def __init__(self, user):
            self.user = user
            super().__init__()

            print("[INFO] Created MainScreenGuiUserAdminView")


            self.master_layout = QVBoxLayout()

            self.this_user_header =  UserOverview(self.user)
```

```
            self.master_layout.addWidget(self.this_user_header)

            # Add the admin controls - which will either be hidden or disabled for the users without
            # the proper privellages

            self.admin_tools = QGroupBox()
            self.admin_tools.setTitle("Administrative Tools") #Set this to change depending on if the thing is locked or not
            self.admin_tools_layout = QVBoxLayout()

            # Show a scrollable list of the UserOverview(s) for all the registered users, and add management
            # tools, eg "Delete User", "Add new user"

            # It miggh be a good idea to wait until the card updating system is sorted.
            self.admin_tools.setLayout(self.admin_tools_layout)

            self.master_layout.addWidget(self.admin_tools)

            self.admin_tools.setFont(GBodyFont)

            self.setLayout(self.master_layout)
# file - MainScreenGui.py - 104 lines
# Copyright (c) 2015 Peter East All Rights Reserved.

import sys

from PyQt4.QtCore import *
from PyQt4.QtGui import *

# Import custom classes for this project

try:
    from MainScreenGui_DiaryView import *
    from MainScreenGui_TaskView import *
    from MainScreenGui_ResourcesView import *
    from MainScreenGui_UserAdminView import *
    from GlobalResources import *
except ImportError:
    print("[ERROR] Error loading modules")
    sys.exit(-1)



# Requires seperate widgets for each view in the tabbed layout
class MainScreen(QMainWindow):
    def __init__(self, user=None, parent=None):
        self.user = user
        self.parent = parent
        super().__init__()
        print("[INFO] Created MainScreenGui")

        self.setWindowTitle("[CMS] Main View")
```

```
        self.main_layout = QVBoxLayout()

        self.central_widget = QWidget()
        # Define the topbar
        self.topbar = QWidget()

        self.topbar_layout = QHBoxLayout()

        self.tb_help_button = QPushButton("?")
        self.tb_help_button.setFixedWidth(30)


        # Create a spacer to keep the thing spaced out
        self.tb_spacer = QLabel("  ")
        self.tb_spacer.setFixedWidth(600)

        self.tb_logout_button = QPushButton("Logout")
        self.tb_logout_button.setFixedWidth(100)
        self.tb_logout_button.clicked.connect(self._logout)

        self.topbar_layout.addWidget(self.tb_help_button)
        self.topbar_layout.addWidget(self.tb_spacer)
        self.topbar_layout.addWidget(self.tb_logout_button)

        self.topbar.setLayout(self.topbar_layout)

        # End of the topobar widget
        self.main_layout.addWidget(self.topbar)

        # Finish defining the topbar
        self.view_switcher = QTabWidget()

        # Define the views for the view_switcher
        # Diary View
        if self.user.permissions["Meetings"]:
            self.diary_view = DiaryView(self.user)
            self.view_switcher.addTab(self.diary_view, "Planner")
        # Task View
        if self.user.permissions["Tasks"]:
            self.task_view = TaskView(self.user)
            self.view_switcher.addTab(self.task_view, "Tasks")

        # Resources view
        if self.user.permissions["Resources"]:
            self.resources_view = ResourcesView(self.user)
            self.view_switcher.addTab(self.resources_view, "Resources")


        # User Admin View
        if self.user.permissions["ChangeOwnData"] or self.user.permissions["Admin"]:
            self.user_admin_view = UserAdminView(self.user)
            self.view_switcher.addTab(self.user_admin_view, "User Admin")
```

```
            # finish defining the view switcher


            self.view_switcher.setFont(GBodyFont)

            # End the definitions for the view swtich
            # Add the task view to the window
            self.main_layout.addWidget(self.view_switcher)


            # Fill in the window
            self.central_widget.setLayout(self.main_layout)
            self.setCentralWidget(self.central_widget)

        def _logout(self):
            self.user = None
            self.close()
            self.parent.show()
            self.parent.reset()
# file - DatabaseInit.py - 166 lines
# DatabaseInit
# main program

#This tidies all of the SQL queries into another namespace.
import SqlDictionary
import random
import hashlib
import sqlite3

def gen_pw_hash(password):
    phash = hashlib.md5()
    phash.update(bytes(password, "UTF-8"))
    return phash.hexdigest()

class Database:
    """This is the general database wrapper that I'll use throughout the system"""
    def __init__(self, child, database_name="cmsdb.db"):
        #print("[INFO] Created database object")

        self.db_name = database_name

    def _connect_and_execute(self, sql="", database_name=None):
        #print(sql)
        if database_name == None:
            database_name = self.db_name

        with sqlite3.connect(self.db_name) as dbcon:
            cursor = dbcon.cursor()
            cursor.execute(sql)
            results = cursor.fetchall()

        #print("[INFO] Executed SQL query \"{0}\"".format(sql))
        return results
```

```
class ResourcesInfo(Database):
	def __init__(self):
		super().__init__(self)
		self.create_table()

	def create_table(self):
		self._connect_and_execute(SqlDictionary.CREATE_RESOURCES)

	def get_all_resources(self):
		return self._connect_and_execute(SqlDictionary.GET_ALL_RESOURCES)

	def add_resources(self):
		pass


class UsersInfo(Database):
	def __init__(self, uid = 0):
		super().__init__(self)
		self.create_table()

	# NB: all input MUST be sanitized at this point.
	def create_table(self):
		self._connect_and_execute(SqlDictionary.CREATE_USERS)
		self._create_initial_admin_user()

	def _create_initial_admin_user(self):
		# This is to create an initial administrative user in case something happens to the
database
		pwd = "".join([chr(random.choice(range(ord('A'), ord('z')))) for c in range(10)])

		new_user_info = {"Name":"ADMIN - TMP", "Username":"default_admin", "Password":
gen_pw_hash(pwd), "Permissions": 29}

		if len(self.get_all_users("WHERE(Username = 'default_admin')")) == 0:
			print("[INFO] Empty users table detected, adding default user...")
			self.add_user(new_user_info)
			print("[INFO] Default user added,\n\tUsername: 'default_admin'\n\tPassword:
'{0}'".format(pwd))

	def get_all_users(self, condition = ""): # Add a SQL condition? maybe? TODO: refactor
this bit
		return self._connect_and_execute(SqlDictionary.GET_ALL_USERS.format(condition))

	def get_uid_by_username(self, username=""):
		return self._connect_and_execute((SqlDictionary.GET_USER_ID.format(username)))
[0][0]

	def get_username_by_uid(self, uid=None):
		return
self._connect_and_execute(SqlDictionary.GET_USERNAME_BY_UID.format(uid))[0][0]

	def add_user(self, info):
```

```
            #info follows the format {"SQL value":Data value}
            values = "'{0}', '{1}', '{2}', {3}".format(info["Name"], info["Username"],
info["Password"], info["Permissions"])

            return self._connect_and_execute(SqlDictionary.ADD_USER.format(values))

        def update_user_password(self, password, uid):
            sql = SqlDictionary.UPDATE_PASSWORD.format("'{0}'".format(password), uid)
            return self._connect_and_execute(sql)


class TasksInfo(Database):

        def __init__(self):
            super().__init__(self)
            self.create_table()

        def create_table(self):
            self._connect_and_execute(SqlDictionary.CREATE_TASKS)
            self._connect_and_execute(SqlDictionary.CREATE_TASKATTENDEE)

        def get_info_by_id(self, task_id):
            sql = SqlDictionary.GET_TASK.format("WHERE (TaskID = {0})".format(task_id))
            raw = self._connect_and_execute(sql)[0]
            return {"TaskID":raw[0], "Title":raw[1], "Description":raw[2], "OwnerID":raw[3],
"Attendees":raw[4]}

        def get_ids_by_owner(self, owner_id):
            sql = SqlDictionary.GET_TASK_ID_LIST.format("WHERE Owner =
{0}".format(owner_id))
            output_ids = []
            for row in self._connect_and_execute(sql):
                output_ids.append(row[0])
            return output_ids

        def add_task(self, info):
            SQL_DATA = """'{0}', '{1}', {2}, {3}""".format(info["Title"], info["Description"],
info["OwnerID"], info["Attendees"])
            self._connect_and_execute(SqlDictionary.ADD_TASK.format(SQL_DATA))



class MeetingsInfo(Database):
        def __init__(self, meeting_info = None):
            super().__init__(self)
            self.create_table()
            self.meeting_info = meeting_info
            self.id = None

        def create_table(self):
            self._connect_and_execute(SqlDictionary.CREATE_MEETINGS)
            self._connect_and_execute(SqlDictionary.CREATE_MEETINGS_ATTENEDEES)

        def add_meeting(self):
```

```
            SQL_DATA = "{0}, '{1}', '{2}', '{3}'".format(self.meeting_info["OwnerID"],
                  self.meeting_info["Title"],
                  self.meeting_info["ISOTime"],
                  self.meeting_info["Location"])
            self._connect_and_execute(SqlDictionary.ADD_MEETING.format(SQL_DATA)) #TODO
Sort out the formatting.
            self.id = self._connect_and_execute("SELECT Max(MeetingID) FROM Meetings;")[0][0]

      def get_meeting_info(self):
            sql_condition = "WHERE (MeetingID = {0})".format(self.meeting_info['MeetingID'])
            q = SqlDictionary.GET_MEETING.format(sql_condition)
            results = self._connect_and_execute(q)
            return results[0]

      def add_meeting_attendee(self, user_id):
            sql_values = """{0}, {1}, 0""".format(self.id, user_id)
            return
self._connect_and_execute(SqlDictionary.ADD_MEETING_ATTENDEE.format(sql_values))


      def get_meetings_by_owner(self, OwnerID):
            sql_condition = "WHERE (OwnerID = {0})".format(OwnerID)
            q = SqlDictionary.GET_MEETING_ID_LIST.format(sql_condition)
            return self._connect_and_execute(q)

      def get_outstanding_meetings(self, OwnerID):
            results =
self._connect_and_execute(SqlDictionary.GET_OUTSTANDING_MEETINGS_TO_BE_ATTENDED.for
mat(OwnerID))
            return results

      def get_meeting_attendees(self, MeetingID):
            return
self._connect_and_execute(SqlDictionary.GET_MEETING_ATTENDEES.format(MeetingID))

      def respond_to_attendance_request(self, attending, MeetingID, UserID):
            if attending:
                  self._connect_and_execute(SqlDictionary.ACCEPT_MEETING.format("UserID =
{0} AND MeetingID = {1}".format(UserID, MeetingID)))
            else:
                  self._connect_and_execute(SqlDictionary.REJECT_MEETING.format("UserID =
{0} AND MeetingID = {1}".format(UserID, MeetingID)))
# file - IndicatorBadge.py - 40 lines
# Indicator Badge -  a PyQt widget to display a numerical indicator Badge

from PyQt4.QtCore import *
from PyQt4.QtGui import *

from GlobalResources import *

class Indicator(QFrame):
      def __init__(self, value = 0):
            super().__init__()
            self.value = value
```

```
            self.main_layout = QVBoxLayout()

            self.value_display = QLabel(str(self.value))

            self.main_layout.addWidget(self.value_display)

            self.setFixedHeight(30)
            #self.setFixedWidth(30)
            self.colour = QColor(255, 61, 0)

            self.setStyleSheet("QFrame {background-color: %s;  border-radius: 15; background-
clip: margin;}" % self.colour.name())

            self.text_colour = QColor(0xFF, 0xFF, 0xFF)

            self.value_display.setStyleSheet("QLabel {color: %s }" % self.text_colour.name())

            self.setFrameStyle(QFrame.StyledPanel + QFrame.Plain)
            self.setLayout(self.main_layout)

      def update(self, new_value):

            self.value = new_value

            self.value_display.setText(str(self.value))

            # do some cool stuff here :-)
      def getValue(self):
            return int(self.value)
# file - MainScreenGui_TaskView.py - 92 lines
from PyQt4.QtCore import *
from PyQt4.QtGui import *

from NewTaskDialog import *

from GlobalResources import *
from DatabaseInit import *
from Tasks import *

class TaskView(QWidget):
      def __init__(self, user = None):
            super().__init__()
            self.user = user

            self.main_layout = QVBoxLayout()


            self.title = QLabel("Outstanding Tasks")
            self.title.setFont(GTitleFont)

            self.main_layout.addWidget(self.title)

            # Set up the two-pane view
```

```
        self.pane_container = QWidget()
        self.pane_layout = QHBoxLayout()

        # Left side
        self.left_widget = QWidget()
        self.left_layout = QVBoxLayout()
        ##Task list

        self.task_list_view = QListView()

        self.update_task_list()


        self.left_layout.addWidget(self.task_list_view)
        self.left_widget.setLayout(self.left_layout)

        self.pane_layout.addWidget(self.left_widget)
        # End Left pane
        # Start right pane

        self.right_widget = QWidget()
        self.right_layout = QVBoxLayout()

        self.add_new_task_button = QPushButton("Add new Task")
        self.add_new_task_button.setFixedWidth(150)
        self.add_new_task_button.clicked.connect(self.display_new_task_dialog)
        self.right_layout.addWidget(self.add_new_task_button)

        self.spacer = QLabel(" ")
        self.spacer.setFixedHeight(300)
        self.right_layout.addWidget(self.spacer)

        self.right_widget.setLayout(self.right_layout)
        self.pane_layout.addWidget(self.right_widget)
        # End right pane


        self.pane_container.setLayout(self.pane_layout)
        self.main_layout.addWidget(self.pane_container)

        self.setLayout(self.main_layout)

    def display_new_task_dialog(self):
        new_task_dialog = NewTaskDialog(self.user)

        new_task_dialog.exec_()
        self.update_task_list()

    def update_task_list(self):

        # Make it so that when the item is clicked, and the check box is

        print("[INFO] Updating task list... ")
```

```
            # Add some data from the database
            data = QStandardItemModel()

            #Database fetch example
            ids = TasksInfo().get_ids_by_owner(self.user.id)
            print("[INFO] {0} Tasks found for user id: {0}".format(len(ids), self.user.id))
            self.tasks = []
            for taskID in ids:
                self.tasks.append(Task(databaseid=taskID))

                tmp = QStandardItem(self.tasks[-1].text)
                tmp.setCheckable(True)
                data.appendRow(tmp)
            self.task_list_view.setModel(data)
            print("[INFO] Task view update successful")
# file - Tasks.py - 25 lines
# This one's for taking the data out of the database

from DatabaseInit import TasksInfo

class Task:
    def __init__(self, title="", subtitle="", priority=1, databaseid=None):
            self.text = ""
            if databaseid == None:
                self.title = title
                self.priority = priority
                self.subtitle = subtitle
                self.text  = self.title + "\n  " + self.subtitle
            else:
                self.info = TasksInfo().get_info_by_id(databaseid)
                self.text = self.info["Title"] +"\n  "+self.info["Description"]
                # TODO: The tasks are gonna need a due date and priority in the database so
that
                # the listings can be ordered by priority.
                pass

    def load_task_from_database(self, taskid):
            pass

    def complete(self):
            self.title+= " [Done]"
            self.priority = -1
# file - ChangePasswordDialog.py - 135 lines
# The dialog for changing a user's password

from PyQt4 import QtCore
from PyQt4 import QtGui

from DatabaseInit import UsersInfo
from GlobalResources import *

class _PWErrorDialog(QDialog): #Blank error dialog
    def __init__(self):
            super().__init__()
```

```
            self.setWindowTitle("Error")
            self.layout = QVBoxLayout()
            self.title = QLabel("Password Error")
            self.title.setFont(GTitleFont)
            self.layout.addWidget(self.title)
            self.label = QLabel("")
            self.layout.addWidget(self.label)

            self.setLayout(self.layout)

class _PWMismatchErrorDialog(_PWErrorDialog):
    def __init__(self):
            super().__init__()
            self.label.setText("New passwords do not match, try again")

class _PWCurrentIncorrectError(_PWErrorDialog):
    def __init__(self):
            super().__init__()
            self.label.setText("You password is incorrect")


class ChangePasswordDialog(QDialog):
    def __init__(self, user):
            super().__init__()

            INPUT_WIDTH = 400
            LABEL_WIDTH = 200

            self.user = user

            self.setWindowTitle("Change your password")

            self.layout = QVBoxLayout()

            self.title = QLabel("Change your password")
            self.title.setFont(GTitleFont)
            self.layout.addWidget(self.title)

            self.pw_current_container = QWidget()
            self.pw_current_entry = QLineEdit()
            self.pw_current_entry.setFixedWidth(INPUT_WIDTH)
            self.pw_current_entry_label = QLabel("Enter your current password:")
            self.pw_current_entry_label.setFixedWidth(LABEL_WIDTH)
            self.pw_current_entry.setEchoMode(QLineEdit.Password)

            self.pw_container_layout = QHBoxLayout()
            self.pw_container_layout.addWidget(self.pw_current_entry_label)
            self.pw_container_layout.addWidget(self.pw_current_entry)

            self.pw_current_container.setLayout(self.pw_container_layout)
            self.layout.addWidget(self.pw_current_container)

            self.new_pw_container = QWidget()
            self.new_pw_label = QLabel("Enter your new password:")
```

```
        self.new_pw_label.setFixedWidth(LABEL_WIDTH)
        self.new_pw_entry = QLineEdit()
        self.new_pw_entry.setFixedWidth(INPUT_WIDTH)
        self.new_pw_entry.setEchoMode(QLineEdit.Password)

        self.new_pw_layout = QHBoxLayout()
        self.new_pw_layout.addWidget(self.new_pw_label)
        self.new_pw_layout.addWidget(self.new_pw_entry)

        self.new_pw_container.setLayout(self.new_pw_layout)
        self.layout.addWidget(self.new_pw_container)

        self.confirm_pw_container = QWidget()
        self.confirm_pw_label = QLabel("Confirm your new password:")
        self.confirm_pw_label.setFixedWidth(LABEL_WIDTH)
        self.confirm_pw_entry = QLineEdit()
        self.confirm_pw_entry.setFixedWidth(INPUT_WIDTH)
        self.confirm_pw_entry.setEchoMode(QLineEdit.Password)
        self.confirm_pw_entry.returnPressed.connect(self._pwchange_action)

        self.confirm_pw_layout = QHBoxLayout()
        self.confirm_pw_layout.addWidget(self.confirm_pw_label)
        self.confirm_pw_layout.addWidget(self.confirm_pw_entry)

        self.confirm_pw_container.setLayout(self.confirm_pw_layout)
        self.layout.addWidget(self.confirm_pw_container)

        self.button_container = QWidget()
        self.button_container_layout = QHBoxLayout()
        self.accept_button = QPushButton("Accept")
        self.accept_button.clicked.connect(self._pwchange_action)
        self.button_container_layout.addWidget(self.accept_button)

        self.reject_button = QPushButton("Cancel")
        self.reject_button.clicked.connect(lambda: self.close())
        self.button_container_layout.addWidget(self.reject_button)

        self.button_container.setLayout(self.button_container_layout)
        self.layout.addWidget(self.button_container)

        self.setFont(GBodyFont)

        self.setLayout(self.layout)

    def _pwchange_action(self):
        # Generate password hash
        # Get password hash from the database
        # Compare the two
        # if correct, update the database entry for the password
        # should be easy

        # Check that the pw entry and the pwconfirm are equal

        passwords_the_same = self.confirm_pw_entry.text() == self.new_pw_entry.text()
```

```
            current_pw_correct = self.user.password_hash_cmp(self.pw_current_entry.text())

            if passwords_the_same and current_pw_correct:
                UsersInfo().update_user_password(User.gen_pw_hash(None,
self.new_pw_entry.text()), self.user.id)
                self.close()
                # Proceed to change the password
                print("[DEBUG] Passwords changed successfully
(ChangePasswordDialog.py:126)")
            elif not passwords_the_same and current_pw_correct:
                e = _PWMismatchErrorDialog()
                e.show()
                e.exec_()
                # Display a messagebox explaining wtf is wrong.
            else:
                e = _PWCurrentIncorrectError()
                e.show()
                e.exec_()
# file - MeetingWidget.py - 103 lines
# Meeting overview widget

from PyQt4.QtCore import *
from PyQt4.QtGui import *

from GlobalResources import *
from Meetings import Meeting
from DatabaseInit import UsersInfo, MeetingsInfo
#from Meetings import *

class MeetingOverview(QFrame):
    def __init__(self, meeting):
        """
        Should take a Meeting object as a parameter rather than passing all of the individual
parameters in.
        """
        super().__init__()
        self.meeting = meeting
        self.layout = QVBoxLayout()

        self.setFrameStyle(QFrame.StyledPanel + QFrame.Sunken)

        # Define the widgets

        self.title = QLabel(meeting.title)
        self.title.setFont(GTitleFont)
        self.layout.addWidget(self.title)

        self.place_title = QLabel("At: "+meeting.place)
        self.layout.addWidget(self.place_title)

        self.when_title = QLabel(meeting.when)
        self.layout.addWidget(self.when_title)

        self.owner_label = QLabel()
```

```
            self.layout.addWidget(self.owner_label)

            self.attendees_title = QLabel("Attendees:")
            self.layout.addWidget(self.attendees_title)

            self.attendees_list = []
            for index, person in enumerate(meeting.attendees):
                self.attendees_title.setText(self.attendees_title.text()+"\n"+person)

            #self.setMinimumHeight(100)
            self.buttons_widget = QWidget()
            self.buttons_layout = QHBoxLayout()

            self.delete_button = QPushButton("Delete")
            self.buttons_layout.addWidget(self.delete_button)

            self.edit_button = QPushButton("Edit")
            self.edit_button.setFixedWidth(150)
            self.buttons_layout.addWidget(self.edit_button)

            self.buttons_widget.setLayout(self.buttons_layout)
            self.layout.addWidget(self.buttons_widget)
            self.setLayout(self.layout)
            self.setMinimumSize(400, 200)

        def _edit_button_action(self):
            #Create a NewMeetingDialog with the information from this meeting
            pass


class PendingMeetingOverview(MeetingOverview):
        def __init__(self, meeting, user):
            super().__init__(meeting)
            self.meeting = meeting
            self.user = user
            # Get the owner's name
            owner_name = UsersInfo().get_username_by_uid(meeting.info["OwnerID"])
            self.owner_label.setText("From: {0}".format(owner_name))

            self.edit_button.setText("Respond - Confirm")
            self.edit_button.clicked.connect(self._accept_meeting)

            self.deny_button = QPushButton("Respond - Deny")
            self.deny_button.clicked.connect(self._reject_meeting)
            self.deny_button.setFixedWidth(150)
            self.buttons_layout.addWidget(self.deny_button)

        def _accept_meeting(self):
            MeetingsInfo().respond_to_attendance_request(True, self.meeting.meeting_id,
self.user.id)
            print("[INFO] Meeting accepted")

        def _reject_meeting(self):
            MeetingsInfo().respond_to_attendance_request(False, self.meeting.meeting_id,
```

```
self.user.id)
            print("[INFO] Meeting Rejected")

class PleaseSelectMeetingPlaceholder(QFrame):
    def __init__(self, empty = False):
            super().__init__()
            self.layout = QHBoxLayout()

            if not empty:
                self.label = QLabel("Please select\na meeting")
            else:
                self.label = QLabel("You have no\nnew meetings")
            self.label.setFont(GTitleFont)
            self.layout.addWidget(self.label)
            self.setLayout(self.layout)
            self.setFixedWidth(300)

# file - RespondToPendingRequestsDialog.py - 80 lines
# Respond to meeting requests

from PyQt4.QtCore import *
from PyQt4.QtGui import *

from GlobalResources import *
from Meetings import Meeting
from MeetingWidget import *
from DatabaseInit import MeetingsInfo


class RespondToPendingMeetingDialog(QDialog):
    def __init__(self, user):
            self.user = user
            super().__init__()

            #Respond to meeting request,
            # two panes, one for a list of pending meetings,
            # another for a tools and controls to deal with those
            # pending meetings
            self.setWindowTitle("Respond to Pending Requests")
            self.main_layout = QVBoxLayout()

            self.title = QLabel("Respond to Pending Requests")
            self.title.setFont(GTitleFont)
            self.main_layout.addWidget(self.title)

            self.pane_container = QWidget()
            self.pane_container_layout = QHBoxLayout()
            self.left_pane = QWidget()
            self.left_pane_layout = QVBoxLayout()

            self.meetings_list_view = QListView()
            self.meetings_list_view.clicked.connect(self._switch_right_stack)

            # End of 'following code'
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            self.left_pane_layout.addWidget(self.meetings_list_view)


            self.left_pane.setLayout(self.left_pane_layout)

            self.right_pane = QWidget()
            self.right_pane_layout = QStackedLayout()

            self.meeting_view =
PleaseSelectMeetingPlaceholder(len(MeetingsInfo({}).get_meetings_by_owner(self.user.id))==
0)
            self.right_pane_layout.addWidget(self.meeting_view)
            self.update_pending_meeting_list()

            self.right_pane.setLayout(self.right_pane_layout)
            self.pane_container_layout.addWidget(self.left_pane)
            self.pane_container_layout.addWidget(self.right_pane)
            self.pane_container.setLayout(self.pane_container_layout)
            self.main_layout.addWidget(self.pane_container)


            self.setLayout(self.main_layout)

        def update_pending_meeting_list(self):
            print("[INFO] Updating list of pending appointments")

            self.data = QStandardItemModel()

            ids = MeetingsInfo().get_outstanding_meetings(self.user.id)
            print("[INFO] {0} meetings found for user id: {1}".format(len(ids), self.user.id))

            self.meetings = []
            for meetingID in ids:
                self.meetings.append(Meeting(meeting_id=meetingID[0]))
                meeting = self.meetings[-1]
                self.right_pane_layout.addWidget(PendingMeetingOverview(meeting, self.user))
                tmp =
QStandardItem(meeting.title+"\n"+meeting.place+"\n"+meeting.when+"\n")
                tmp.setCheckable(False)
                self.data.appendRow(tmp)
            self.meetings_list_view.setModel(self.data)

            # Use a QStackedLayout to have the stack of meeting widgets

        def _switch_right_stack(self):
            index = self.meetings_list_view.selectedIndexes()[0].row()
            self.right_pane_layout.setCurrentIndex(index+1)
# file - LoginAction.py - 81 lines
#Login action:
#   The code and database actions performed when the user attempts to log into the system.

import hashlib

from DatabaseInit import *
```

```
import SqlDictionary

class User:
    def __init__(self, uid=0):
        self.info = {} # info to be retrieved from the database
        self.permissions = {}
        self.user_id = uid

        self.dbinterface = UsersInfo()

        self.update_user_info()

    def gen_pw_hash(self, password):
        # Create a md5 hash of the password
        phash = hashlib.md5()
        # (Encode the password - the python md5 implementation  only accepts binary
data.)
        phash.update(bytes(password, "UTF-8"))
        # return a hexadecimal representation of the md5 hash.
        return phash.hexdigest()

    def password_hash_cmp(self, password_input):
        currenthash = self.info["Password"]
        return currenthash == self.gen_pw_hash(password_input)

    def add_user(self, info=None):

        # If there's no info input, use the existing info for this instance of the
        # class.
        if info == None:
            info = self.info

        # Use the database module to add the user's info to the database.
        UsersInfo().add_user(info)

    def update_user_info(self):
        # get the first item in the list of users which have the UserID of
        # `self.user_id` (the length of the list should be 1)
        raw_info = self.dbinterface.get_all_users("WHERE(UserID =
{0})".format(self.user_id))[0]

        # raw_info follows the format [id, Name, Username, Password, Permissions]
        # put the indidual parts of the raw data into a python dictionary
        self.info["UserID"] =  self.user_id
        self.info["Name"] = raw_info[1]
        self.info["Username"] = raw_info[2]
        self.info["Password"] =  raw_info[3]
        self.info["Permissions"] = raw_info[4]

        # Generate the permissions array for this user.
        self.gen_permissions()
        self.id = self.info["UserID"]

    def gen_permissions(self):
```

```
            # Get the denary integer value for the user's permissions
            perm = self.info["Permissions"]

            # Create a list of the default values for the user's permissions
            blist = [False, False, False, False, False]

            # For each item in a list of the individual binary digits
            # The python `bin` function outputs a string in the format '0b10101'
            # which is why we need to get rid of the first two characters
            for index, digit in enumerate(bin(int(perm))[2:]):
                # set each item in the b(inary)list as a python Bool so it can easily
                # be used in selection statements
                blist[index] = (bool(int(digit)))
            permissions = {}
            permissions["Meetings"] = blist[0]
            permissions["Tasks"] = blist[1]
            permissions["Resources"] = blist[2]
            permissions["ChangeOwnData"] = blist[3]
            permissions["Admin"] = blist[4]

            # Overwrite the existing permissions number with a dictionary.
            self.permissions = permissions
            return permissions
# file - SqlDictionary.py - 110 lines
# sql dictionary
# This file will contain all of the SQL references used throughout the system, with string
formatting already
# added

#initialisation scripts

CREATE_USERS = """CREATE TABLE IF NOT EXISTS Users
                    (UserID INTEGER PRIMARY KEY AUTOINCREMENT,
                    Name TEXT,
                    Username TEXT,
                    Password TEXT,
                    Permissions INTEGER
                    );
"""

#Permissions: Like unix file permissions but using denary instead of octal
# and there are 5 bits rather than several.
# eg 0b11010 - will give the user permission to use the meetings, tasks and user admin, and
not resources management or privac.

# time to design databases - NOW!

CREATE_MEETINGS = """CREATE TABLE IF NOT EXISTS Meetings
                    (MeetingID INTEGER PRIMARY KEY AUTOINCREMENT,
                    OwnerID INTEGER,
                    Title TEXT,
                    ISOTime TEXT,
                    Location TEXT
                    );
```

```
"""

CREATE_MEETINGS_ATTENEDEES = """CREATE TABLE IF NOT EXISTS MeetingAttendee(
      MeetingID INTEGER,
      UserID INTEGER,
      Confirmed BOOLEAN
);"""

CREATE_TASKS = """CREATE TABLE IF NOT EXISTS Tasks
                  (TaskID INTEGER PRIMARY KEY AUTOINCREMENT,
                  Title TEXT,
                  Description TEXT,
                  Owner INTEGER,
                  Attendees INTEGER
                  );"""

CREATE_TASKATTENDEE = """CREATE TABLE IF NOT EXISTS TaskAttendee
                  (
                  TaskId INTEGER,
                  UserId INTEGER
                  );
"""

CREATE_RESOURCES = """CREATE TABLE IF NOT EXISTS Resources
                  (ResourceID INTEGER PRIMARY KEY AUTOINCREMENT,
                  Name TEXT,
                  Cost INTEGER,
                  QuantityAvailable INTEGER,
                  QuantityRequired INTEGER
);
"""

# Users

GET_ALL_USERS = """ SELECT * FROM Users {0}; """

GET_USER_ID = """ SELECT UserID FROM Users WHERE (Username = '{0}');"""

ADD_USER = """INSERT INTO Users(Name, Username, Password, Permissions) VALUES({0});"""

UPDATE_PASSWORD = """UPDATE Users SET Password = {0} WHERE UserID = {1};"""

# Meetings

ADD_MEETING = """INSERT INTO Meetings(OwnerID, Title, ISOTime, Location) VALUES({0})"""

GET_MEETING = """SELECT * FROM Meetings {0};"""

GET_OUTSTANDING_MEETINGS_TO_BE_ATTENDED = """SELECT * FROM MeetingAttendee
WHERE (UserID = {0} AND Confirmed = 0);"""

GET_MEETING_ID_LIST = """SELECT MeetingID FROM Meetings {0};"""

ADD_MEETING_ATTENDEE = """INSERT INTO MeetingAttendee(MeetingID, UserID, Confirmed)
```

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VALUES({0})"""

GET_MEETING_ATTENDEES = """SELECT UserID FROM MeetingAttendee WHERE (MeetingID =
{0})"""

ACCEPT_MEETING = """UPDATE MeetingAttendee SET Confirmed = 1 WHERE {0}"""

REJECT_MEETING = """UPDATE MeetingAttendee SET Confirmed = 0 WHERE {0}"""

DELETE_MEETING = """DELETE FROM MeetingAttendee WHERE {0}"""

# Tasks

GET_TASK = """SELECT * FROM Tasks {0};"""

GET_TASK_ID_LIST = "SELECT TaskID FROM Tasks {0};"""

ADD_TASK = """INSERT INTO Tasks(Title, Description, Owner, Attendees) VALUES({0});"""

GET_USERNAME_BY_UID = """SELECT Name FROM Users WHERE(UserID = {0})"""

# Resources

CREATE_RESOURCES = """CREATE TABLE IF NOT EXISTS Resources
                    (ResourceID INTEGER PRIMARY KEY AUTOINCREMENT,
                    ResourceName TEXT,
                    ResourceCost INTEGER,
                    ResourceQuantity INTEGER,
                    ResourceRequiredQuantity INTEGER);
                    """
GET_ALL_RESOURCES = """SELECT * FROM Resources;"""
# file - NewTaskDialog.py - 88 lines
# NewTaskDialogGui

from PyQt4.QtCore import *
from PyQt4.QtGui import *

from GlobalResources import *
from Tasks import *

from DatabaseInit import TasksInfo

class NewTaskDialog(QDialog):
    def __init__(self, user):
        self.user = user
        super().__init__()

        self.main_layout = QVBoxLayout()
        self.setWindowTitle("Add new task")
        self.smalltitle = QLabel("Create new task")
        self.smalltitle.setFont(GBodyFont)
        self.title = QLabel("New Task")
        self.title.setFont(GTitleFont)
```

```
        self.main_layout.addWidget(self.smalltitle)
        self.main_layout.addWidget(self.title)

        self.title_entry_label = QLabel("Title:")
        self.main_layout.addWidget(self.title_entry_label)
        self.title_entry = QLineEdit("")
        self.title_entry.textChanged.connect(self.update_window_title)
        self.main_layout.addWidget(self.title_entry)

        #self.people_entry_label = QLabel("With whom:")
        #self.main_layout.addWidget(self.people_entry_label)

        #self.people_entry = QLineEdit()
        #self.people_entry.setPlaceholderText("Type usernames here")
        #self.people_entry.textChanged.connect(self.check_names)
        #self.main_layout.addWidget(self.people_entry)

        self.description_entry_label = QLabel("Description:")
        self.main_layout.addWidget(self.description_entry_label)

        self.description_entry = QLineEdit()
        self.main_layout.addWidget(self.description_entry)

        self.submit_button = QPushButton("Submit")
        self.submit_button.clicked.connect(self.submit)
        self.main_layout.addWidget(self.submit_button)

        self.setLayout(self.main_layout)
        self.setFont(GBodyFont)

    def update_window_title(self):
        newtext = self.title_entry.text()[0:45]
        if len(newtext) == 45:
            newtext += "..."
        if newtext == "":
            self.title.setText("New Task")
        else:
            self.title.setText(newtext)
        self.title_entry.setText(newtext)
        self.setWindowTitle(newtext)


        self.title_entry.setFixedWidth(self.title.width())

    def check_names(self):
        # Add some name checking functionality
        pass

    def validate(self):
        valid = True
        valid *= not (self.title_entry.text().strip() == "")
        # valid *= not (self.people_entry.text().strip() == "")
        valid *= not (self.description_entry.text().strip() == "")
```

```
            return valid


        def submit(self):
            if self.validate():
                info = {"Title":self.title_entry.text(), "Description":self.description_entry.text(),
"OwnerID":self.user.id, "Attendees":""}
                TasksInfo().add_task(info)
                self.close()
            else:
                self.title_entry.setPlaceholderText("Required")
                #self.people_entry.setPlaceholderText("Required")
                self.description_entry.setPlaceholderText("Required")
# file - UsernameLookupDialog.py - 35 lines
from PyQt4.QtCore import *
from PyQt4.QtGui import *

from GlobalResources import *

from DatabaseInit import *

class UsernameLookup(QDialog):
    def __init__(self, parent):
        super().__init__()
        self.setWindowTitle("Select a user")

        self.raise_()
        self.parent = parent
        self.layout = QVBoxLayout()
        self.list = QListView()
        self.list.clicked.connect(self._select_user)
        self.users = UsersInfo().get_all_users()

        data = QStandardItemModel()

        for user in self.users:
            data.appendRow(QStandardItem(user[1]))

        self.list.setModel(data)

        self.layout.addWidget(self.list)
        self.setLayout(self.layout)

        # Get a list of names,
        # Onclick pass names down to the parent.
    def _select_user(self):
        user = self.users[self.list.selectedIndexes()[0].row()]
        self.parent.attendees_entry.setText(self.parent.attendees_entry.text()+",
{0}".format(user[2]))
        self.close()
```