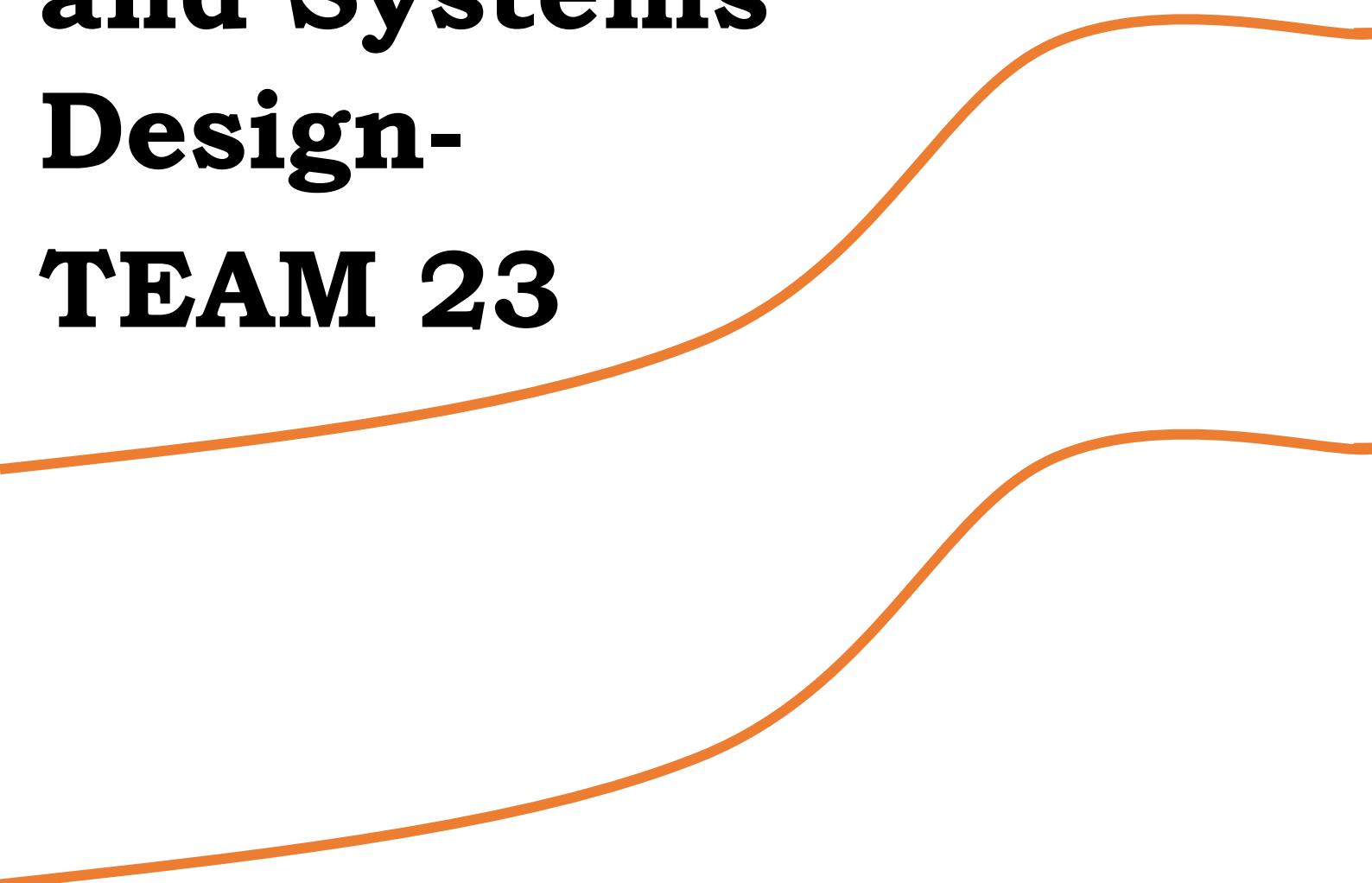


Requirements Specification and Systems Design-

TEAM 23



Summary

This documentation will involve the aspects of:

Creating a system, the fundamental use case specifications alongside the various types of diagrams associated with it and a detailed approach towards the system design.

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Version control

Version control is a fundamental aspect towards the creation of a documentation, which involves the types of revisions made along the process and the various types of redrafting which took place within this time frame.

This documentation holds a simple, yet detailed guide of the relevant changes which have taken place to this document and alerts the users of the redrafting stages. This was an essential part of the process, considering it allowed reviewal by all the different users and thus allowed the documentation to be completed successfully.

Major and Minor Revisions

Major revisions are the changes made by the documentation which involved the documentation to be approved by every member of the group.

Including:

- Numerous edits of updated diagrams (Class, Use Case, ER)
- Removing large chunks of outdated information to more accurate and updated details (Use case specification)

The numerous changes will be signified by an increasing version number of 1. i.e. 2.2 to 3.2
All team members would have to agree and be satisfied before the document can be altered.

Minor versions consist of simple, yet clear changes to the document such as changing the structure and layout of the document.

Including:

- Modifying spelling, punctuation and grammar etc.

These changes will be identified and acknowledged by changing the decimal number after the version number, i.e. 2.2 to 2.3.

Version	Author	Changes	Date
V 1.0	Anil	Initial draft of Introduction, Purpose of scope, Intended audience.	01/02/18
V 1.1	Anil	Added BAPERS description to initial draft (Glossary, current state, requirements)	08/02/18
V 1.2	Myan	Created the table of index use case list and packages.	14/02/18

V 2.2	Raymun	Produced diagrams (Use case and Class)	15/02/18
V 3.2	Parmveer & Mayur & Lukas	Produced drafts of Analysis, ER diagram and created Use case specifications.	17/02/18
V 3.3	Mayur & Myan	Implemented risk analysis.	22/02/18
V 4.3	Parmveer & Lukas	Created Flowchart's	28/02/18
V 5.3	Raymun	Produced Entity Relationship Diagram	01/03/18
V 6.3	Anil	Produced Sitemap and Wireframe	01/03/18
V 6.4	Raymun	Produced GUI design diagram and Database-DDL/DML Statements	02/03/18
V 6.5	Parmveer & Mayur	Re-arranged content and structure, and made GUI class mapping.	03/03/18
V 6.6	Myan	Checked documentation for SPAG and final touch ups on diagram's.	04/03/18

Induction to the document

1.Preface

1.1 Introduction

The document will state the introduction of BAPERS and the design to implementation. It will include the following;

- Use case diagram
- Use case specifications
- Use case prioritisation
- Design class diagrams
- ER Diagram
- GUI designs

The document will list both the system requirements and system design alongside the various functionalities. As well as stating the various actors and interactions within the system boundary.

1.2 Purpose and Scope

The purpose of this document is to explain to the stakeholders the new system for BIPL; BAPERS. The document will contain all the functional, behavioural and design elements of the system, and define the mechanics of implementation.

BAPERS will be the answer to BIPL's ever-changing dynamic system. The systems aim is to improve and support new technology to the company and continue sustaining their high-quality standards. BAPERS allows the company to operate in a smooth manner, keeping track of jobs and a methodical approach to completing the work in hand. The system will give freedom to managerial positions, acting as a way to monitor performance, construct reports and build metrics to improve organisational policies. By having an automated system opposed to a manual, technicians will be able to relay jobs through stations quicker, track the jobs and raise enquiries. This leads to technicians maximising their effort and performing a higher number of tasks, ultimately maintaining an efficient operational level.

1.3 Intended audience

Mr. Lancaster and all the stakeholders of BIPL, including company consultant.

1.4 Glossary

BIPL	Bloomsbury's Image Processing Laboratory
BAPERS	Bloomsbury's Automated Process Execution Recording System
Use case	An interaction of the system with an affiliated actor
UML	Unified Modelling Language, used to visualise the structure and the interactions that occur within a system
Actor	A person or a device that interacts with the system in some way
Packages	Grouping related elements together, will be visible during design and use case diagrams. Creates a semantic boundary and helps structure system.
GUI	Graphical User Interface- A type of user interface allowing Users to interact with a machine.

Requirements Specification

2. BIPL (Current State)

2.1 Current system

The current system is a manual paperback-based process in which customers attend the desk to start a new job. The job is then taken through the different departments at BIPL according to the due tasks in which are performed by technicians. Each department checks for deadlines to make sure they are not exceeded, and when the job is completed it is allocated to a shelf and ready to be retrieved by the representative customer.

Because of a manual paperback system, BIPL suffers the risk of organisational security, events may lead to records being lost or destroyed and the current system offers no way of retrieving them back. The manual system also does not exercise efficient working at the operational level, as the technician effort is not maximised through a manual system due to overheads in communication and un synced operations. The current system also hinders the opportunity for growth and terrestrial expansion. With the ever-growing customer base, BAPERS will allow the organisation to exchange data, provide a universal system and stay connected albeit national or global which is simply not feasible through a manual paperback system.

BIPL's current methodologies do not utilise automation for many of its vital processes such as special instructions on specific jobs, or the configuration of new and existing tasks. The current system lacks a mechanism that incorporates each job to the highest of quality possible, jobs should be able to be tracked throughout its operation, provide a reliable ETA and follow a set blueprint. BIPL should be able to regulate customers history, including payment and jobs, allowing the company to track outstanding fees and use records as evidence. Payment, another imperative process, are processed manually using a paperback method and calculations must be self-made, which is evident of ineffective time use.

2.2 Prevailing BAPERS

By embarking on BAPERS, we know BIPL will gain a sustained competitive edge. Customers will be able to get up-to-date feedback on their jobs, earning discounts for using the service and technicians have a clear blue print on the various tasks to be done. Thus, increasing both customer satisfaction and employee satisfaction, leading to loyalty and accumulating a dominant position in the market. Managerial positions can have a high-level overview on company performance through various reports and ensure the main mission statement; "perfect results, on time, every time" is always met.

3. BAPERS requirements

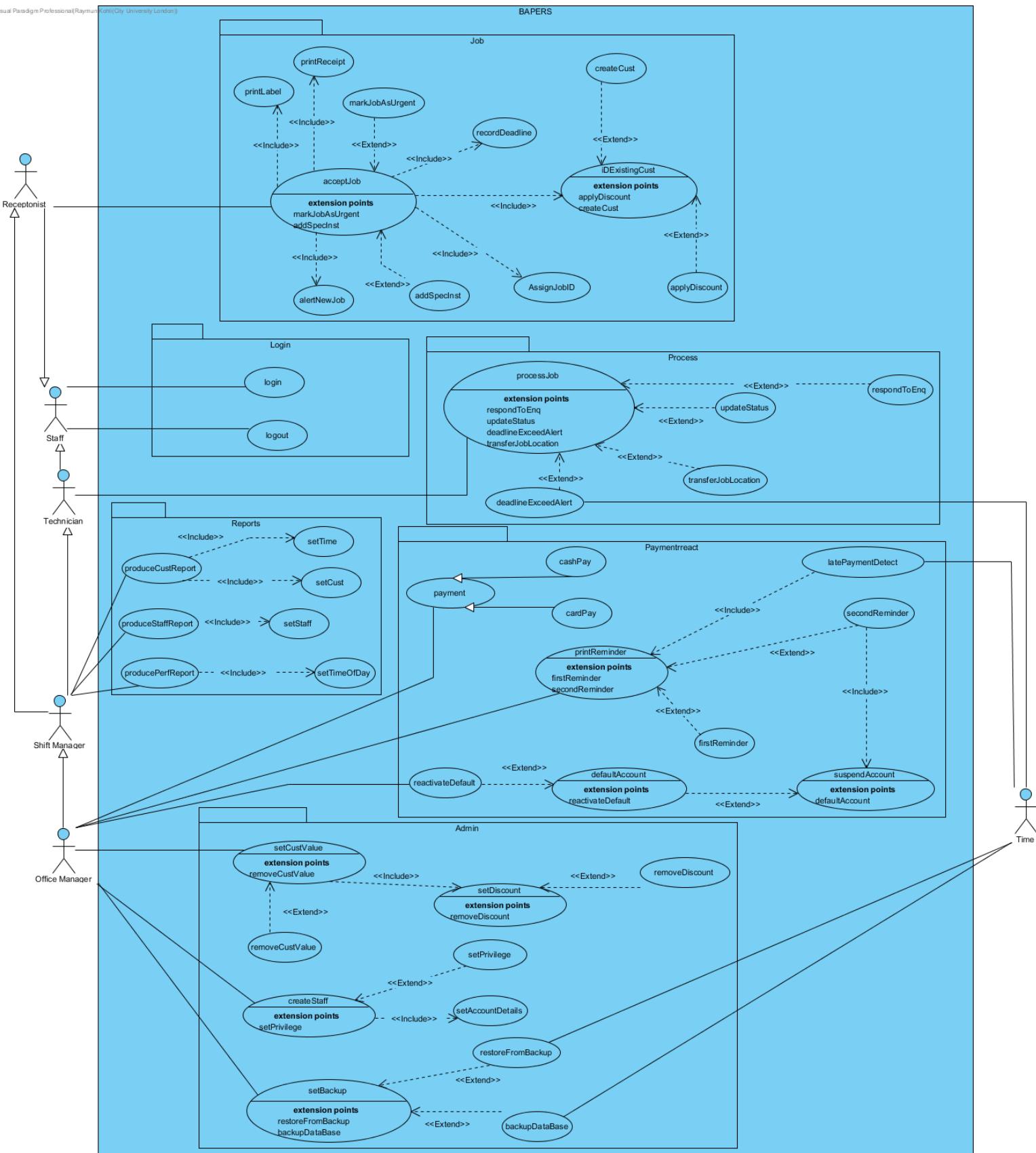
The system should be able to cover all necessary requirements that have been discussed with Mr. Lancaster during the requirements briefing. This section will be using UML to outline the Use Case diagram and the overall functionality of the system, alongside prioritisation to the listed functionalities. The section will also portray the low-level design for system implementation through a Design Class diagram, a GUI and flowchart to visualise BAPERS, and an ERD to model the database schema. The system will also include other basic purposes which include security, dependencies, and overall user experience.

4. Use Case Diagram

A use case has been included within this documentation to:

Demonstrate the user Interactions with the system, and to specify the relationships between the use cases, actors and the system. All functionalities have also been fully covered.

User Case Diagram has been shown below:



5. Use Case Specification

Use Case: Card Pay

Use Case: cardPay
ID: 28
Brief Description: When the job is completed the customer must pay during collection. Valued customers have the ability to pay for a collection of jobs instead of individually.
Primary actors: Receptionist
Secondary actors: None
Preconditions: The job(s) is completed and customers are ready to collect and pay by using card
Main Flow: <ol style="list-style-type: none">1. Customer is notified of job completion2. Customer arrives for collection and is offered two ways of payment; card and cash3. Customer is ready to pay via card4. BAPERS records the following; expiry date, type, and the last 4 digits of the card5. Customer collects their job
Postconditions: Payment has gone through to BAPERS
Alternative flows: paymentDeclined

Alternative flow: paymentDeclined
ID: 28.1
Brief Description: Payment fails during job collection due to card either being expired, insufficient funds or blocked.
Primary actors: Receptionist
Secondary actors: None
Preconditions: Payment has not gone through and an error has occurred
Main Flow: <ol style="list-style-type: none">1. The alternative flow begins during step two of the primary flow (cardPay)2. Error occurs during card payment3. Payment is declined4. Job is on hold

5. Job does/is not complete

Postconditions: Payment is declined and does not go through to BIPL and job is on hold

Use Case: backUpDatabase

Use Case: backupDatabase
ID: 45
Brief Description: Admin privileged user has the ability to backup BAPERS either to an external hardware or cloud. Backup can also be done automatically by pre-determining a time and date. The system backup includes all data currently stored in BAPER e.g. customers, jobs, payment, reports etc.
Primary actors: Office manager
Secondary actors: Time
Preconditions: BAPERS is operational and a backup is either due or being performed manually.
Main Flow: <ol style="list-style-type: none">1. Backup is due or being accessed automatically2. BAPERS undergoes backup, system performance may drop3. Backup is completed and secured4. User has the ability to view backed up data5. Backup time is reset
Postconditions: Backup is complete and secured, the Office manager has the ability to view the backed-up files.
Alternative flows: memoryFull

Alternative flow: memoryFull
ID: 45.1
Brief Description: During back up the process is stopped and an error is presented stating that the memory location for the backup is full
Primary actors: Office manager
Secondary actors: Time
Preconditions: Backup location memory is less than the backup data being processed on it
Main Flow <ol style="list-style-type: none">1. Alternative flow begins during step 2 of primary flow (backupDatabase)2. The backup is stopped and an error stating memory full is presented3. Backup does not process and user cannot view data4. Backup time and date is reset
Postconditions: Backup is cancelled and backup time and date are reset to previous figures.

Use Case: createStaff

Use Case: createStaff
ID: 40
Brief Description: The activity of creating staff to use the BAPERS system, including staff privileges and access levels. Staff creation can range from; receptionist, shift manager, technician and office manager.
Primary actors: Office manager
Secondary actors: None
Preconditions: User is logged in as an Office manager and has the sufficient admin rights to create staff for BAPERS
Main Flow: <ol style="list-style-type: none">1. Office manager selects create new staff function<ul style="list-style-type: none">• Extension point setPrivilege2. Office manager sets account details; name, email etc...3. Office manager sets staff rights, i.e. admin rights of the account4. Office manager saves changes5. Account is added to BAPERS
Postconditions: Account is added and listed on staff list
Alternative flows: alreadyExists, insufficientPrivileges

Alternative flow: alreadyExists
ID: 40.1
Brief Description: Error occurs when creating a new staff as the account already exists in BAPERS and duplicates are not to be permitted.
Primary actors: Office manager
Secondary actors: None
Preconditions: Office manager creates a new staff account which already exists
Main Flow <ol style="list-style-type: none">1. Alternative flow begins during step 2 of primary flow (createStaff)2. The office manager is prompted with an error stating account already exists3. Account is not duplicated in to BAPERS4. Office manager has opportunity to create another new staff5. The function restarts and existing accounts are not affected
Postconditions: Account creation is cancelled and existing accounts are not affected

Alternative flow: insufficientPrivileges
ID: 40.1.1
Brief Description: Error occurs when Office manager selects the function to create a new account for the system
Primary actors: Office manager
Secondary actors: None
Preconditions: User does not have the right privileges to create account or is not logged into an office manager account
<p>Main Flow:</p> <ol style="list-style-type: none"> 1. Alternative flow begins during step 1 of primary flow (createStaff) 2. Error message prompts user when clicked on the function, stating user does not have sufficient privileges 3. System backs out of create staff function 4. Create staff remains unfinished 5. Office manager restarts process
Postconditions: User is not permitted to use the function and system backs out to the previous screen

Use Case: setDiscount

Use Case: setDiscount
ID: 38
Brief Description: Office manager has the ability to set one of the three discount packages to a valued customer; fixed discount, variable discount and flexible discount. The discount applies to customer jobs, however only 1 discount can be associated with a customer
Primary actors: Office manager
Secondary actors: None
Preconditions: Customer has a valued status and has no discounts set on their accounts
Main Flow: <ol style="list-style-type: none">1. Office manager views valued customer list2. Office manager selects customer with no discount plan3. Office manager sets a discount plan<ul style="list-style-type: none">• Extension point: removeDiscount4. Office manager saves the changes5. Discounts are applied to customer jobs at reception
Postconditions: Customer is now affiliated with a discount plan
Alternative flows: customerNotValued, discountExists

Alternative flow: customerNotValued
ID: 38.1
Brief Description: When viewing the valued customer list, a customer may have been recently removed, deleted or stopped using the service regularly and the list isn't updated. Discount plans can only work on current valued customers
Primary actors: Office manager
Secondary actors: None
Preconditions: A valued customer account has recently been deleted, edited or stopped using service regularly
Main Flow: <ol style="list-style-type: none">1. Alternative flow begins during step 1 of the primary flow (setDiscount)2. When viewing the valued customer list, Office manager selects the valued customer to create a discount plan3. Customer is no longer valued

- | |
|--|
| <ol style="list-style-type: none"> 4. Error during selecting the discount plan 5. System removes the customer account from the valued list |
|--|

Postconditions: No other valued customers are affected, and the customer account gets removed from the valued list

Alternative flow: discountExists

ID: 38.1.1

Brief Description: Customer account is already assigned with a discount plan, BAPERS does not allow a customer to have 2 discount plans simultaneously

Primary actors: Office manager

Secondary actors: None

Preconditions: Discount plan already exists for the customer, and the office manager is trying to add a discount on.

Main Flow

1. Alternative flow begins during step 2 of the primary flow (setDiscount)
2. Selected customer has an associated discount plan
3. Error occurs and discount plan is not set
4. The existing discount is not affected
5. Customer already assigned with discount plan
6. Office manager acknowledges and carries on with process

Postconditions: User is not permitted to use the function and system backs out to the previous screen

Use Case: setCustValue

Use Case: setCustValue
ID: 36
Brief Description: The activity of setting a customer status to valued due to punctual payments and regular use of the service. The valued customers are then associated with a discount plan picked by the office manager
Primary actors: Office Manager
Secondary actors: None
Preconditions: Customer is not previously valued and has had the positive attributes of a valued customer i.e. regular use of the service and punctual payments
Main Flow: <ol style="list-style-type: none">1. Office manager views customers2. Office manager selects customer that is currently not valued3. Extension point: removeCustValue4. Upgrades the customer to valued5. Applies and saves the changes to customer list
Postconditions: Customer account is updated on BAPERS
Alternative flows: custNotExist

Alternative flow: custNotExist
ID: 36.1
Brief Description: Customer has recently been deleted or edited out and the list hasn't updated
Primary actors: Office manager
Secondary actors: None
Preconditions: Customer list is not refreshed and deleted customers are still visible
Main Flow <ol style="list-style-type: none">1. Alternative flow begins during step 2 of the primary flow (setCustValue)2. Selected customer does not exist on the system3. Error is presented4. The list updates the current records5. Customers gain the valued experience

Postconditions: Other customer values are not affected, the list is refreshed and the account is not visible anymore

Use Case: alertNewJob

Use Case: alertNewJob
ID: 6
Brief description: After accepting a new job that comes through to BAPERS, the Receptionist must alert BAPERS of the new job, this allows staff to be aware of current system properties.
Primary actors: Receptionist
Secondary actors: None
Preconditions: Receptionist is logged into the system and a new job is requested by the customer
Main Flow: <ol style="list-style-type: none">1. Customer requests a new job2. The receptionist accepts the job3. The receptionist alerts BAPERS of a new job4. The system then presents two options for the alert; either normal or urgent job5. The receptionist sets the job as either normal or urgent and selects enter6. The system displays message confirming the process
Postconditions: The system is alerted of a new job entry
Alternative flows: incorrectJobType

Alternative flow: incorrectJobType
ID: 6.1
Brief Description: The system informs the receptionist that there is an error with the job type chosen, normal/urgent
Primary actors: Receptionist
Secondary actors: None

Preconditions: The receptionist selects incorrect job alert when alerting BAPERS of a new job

Main Flow/Alternative:

1. The alternative flow starts during step 3 of the primary flow (alertNewJob)
2. The system informs the receptionist that the incorrect job type has been selected
3. The job cannot be completed and is stopped
4. System presents the option to alert new job again
5. The job is processed and confirms job type

Postconditions: Other jobs in the system are not affected and user has the option to reselect job type (urgent or normal)

Use Case: login

Use Case: login
ID: 12
Brief description: The activity of staff logging in to use the BAPERS system. Each staff has their own unique login and BAPERS functions differently for each type of staff.
Primary actors: All types of users
Secondary actors: None
Preconditions: BAPERS is loaded up successfully, up to date and operational
<p>Main Flow:</p> <ol style="list-style-type: none">1. The system asks for the username and password2. The user then inserts username and password on the system3. The user then chooses staff type from selection4. The system searches for an appropriate account that meets the details inserted5. If whereby the system successfully finds the account, the relevant account will be displayed
Postconditions: The relevant user will have access to the entire system
Alternative flows: incorrectDetails

Alternative flow: incorrectDetails
ID: 12.1
Brief Description: The system informs the current user that the username or password is incorrect
Primary actors: All types of users
Secondary actors: None
Preconditions: The user has inserted the incorrect username/password

Main Flow:

1. The alternative flow starts during step 4 of the primary flow (login)
2. The system updates the user that either the username/password is incorrect
3. The system then swiftly prompts the user to retry the process
4. If incorrect again, the system will not allow the user to progress
5. Application will fail to run if incorrect more than several tries
6. If correct, system runs smoothly

Postconditions: User is not logged in and system is unaffected.

Use Case: addSpecialInstruction

Use Case: addSpecialInstruction
ID: 7
Brief description: The ability to add special instructions on a job which customers may specify when placing an order
Primary actors: Receptionist
Secondary actors: None
Preconditions: Customer requests special instructions on the job they are processing
<p>Main Flow:</p> <ol style="list-style-type: none">1. Customer requests special instructions on the order2. Receptionist flags special instructions button3. Receptionist attaches a special instruction note on job ID4. Job is placed in BAPERS5. Special instruction accomplished and updated6. Job completed for customer
Postconditions: Special instructions are added as an attachment to the job
Alternative flows: jobMismatch

Alternative flow: jobMismatch
ID: 7.1
Brief Description: The instructions are attached to the incorrect job during order placement
Primary actors: Receptionist
Secondary actors: None
Preconditions: Multiple jobs are in queue and customer requests special instructions on their job

Main Flow:

1. The alternative flow starts during step 2 of the primary flow (addSpecInst)
2. The system informs the receptionist that the wrong job has been associated with instruction
3. The system presents an error during job alert
4. The receptionist has the opportunity to retry to avoid loss, cost and mistreatment
5. The receptionist retries and updates relevant job
6. The receptionist has to start the process again

Postconditions: Special instruction is removed from the wrong job and attached to the right one

Use Case: payment

Use Case: payment
ID: 26
Brief Description: User has the ability to process a payment once the job has been completed. Option to pay by cash or credit/debit card and allows the office manager to record and store the payment on the system.
Primary actors: Office manager
Secondary actors: None
Preconditions: Job is processed and ready to be collected by BAPERS
Main Flow: <ol style="list-style-type: none">1. Customer is notified that the job is ready to collect after completion2. Customer is offered two payment methods; card or cash3. Payment is taken, and details are saved4. Job is marked completed on system5. Office manager processes next payment
Postconditions: Payment is received and stored, the office manager has the ability to alter the payment amount and type
Alternative flows: jobLost

Alternative flow: jobLost
ID: 26.1
Brief Description: Payment is not completed due to job being lost or damaged during image processing
Primary actors: Office manager
Secondary actors: None

Preconditions: The customer is awaiting job collection date and time

Main Flow:

1. The alternative flow starts during step 1 of primary flow (payment)
2. The system presents false shelf location for completed job
3. Customer is alerted of the situation and a time/date change for collection is organised
4. Office manager fails to alter the job
5. Office manager marks job as urgent and produces letter

Postconditions: Office manager recites a new collection date for customer

Use Case: firstReminder

Use Case: firstReminder
ID: 32
Brief Description: When customers have not paid for their jobs during collected or payment due date. Office manager has the ability to inform a valued customer their outstanding balance
Primary actors: Office manager
Secondary actors: None
Preconditions: Job is processed and customer fails to pay
Main Flow: 1. Office manager is alerted by system of late payment 2. Office manager selects the customer(s) out of the list 3. Office manager prints and sends a reminder letter 4.. BAPERS records the actions
Postconditions: Letter has been sent by mail and BAPERS system records the actions for second reminder purposes
Alternative flows: paidOnTime

Alternative flow: paidOnTime
ID: 32.1
Brief Description: Payment has been submitted and stored by BIPL, however BAPERS payment is not updated/refreshed
Primary actors: Office manager
Secondary actors: None

Preconditions: BAPERS payment is not updated/refreshed and customer has already paid fees for jobs

Main Flow:

1. The alternative flow begins during step 1 of the primary flow (firstReminder)
2. The system presents an incorrect outstanding customer list
3. Office manager selects customer(s) to send letter to
4. System presents error stating; error list
5. System is refreshed and customer(s) is removed from list

Postconditions: System is refreshed and reminder letter is not sent. Customer account is no longer listed on outstanding, and other customer is not affected.

6.Packages

Package: Job

ID	Name	Description
1	printReceipt	Print the receipt for the recorded jobs
2	printLabel	The receptionist prints a label for the job and for the materials submitted by the customer
3	markJobAsUrgent	Boolean expression to mark the job as an urgent priority and to be completed in 6 hours (100% surcharge)
4	recordDeadline	Deadline for completion of a job is recorded by the receptionist
5	acceptJob	The receptionist acknowledges and accepts a new job given by the customer
6	alertNewJob	Alerts the BAPERS system of a new job Key use case: Moving from a manual paperback system to BAPERS, means BIPL will increase in efficiency. This is a vital use case to maximise this efficiency. Alerting the arrival of a new job allows the staff to be on top of targets and have a set blueprint on how they will use their times.
7	addSpecInst	Any special instructions given to the receptionist when the job is received are recorded by the receptionist Key use case: Allowing customers to have special instructions on their processed job is a requirement stated by Mr. Lancastar. We believe the customisation of customer jobs becomes a USP to the business, and ultimately becomes a key component to BAPERS.
8	AssignJobID	Every new job is assigned a job number
9	IDexistingCust	An existing customer account is identified by the receptionist
10	createCust	A new customer account can be created for new customers that are using “Bloomsbury’s Image Processing Laboratory(BIPL) for the first time
11	applyDiscount	Applying the discount represented in customer account.

Package: Login

ID	Name	Description
12	login	<p>The use case of staff logging in to BAPERS</p> <p>Key usecase: The importance of security is paramount for all businesses. The fact that a unique login is needed always to use BAPERS means no unauthorised access. This becomes a key use case, and protects the integrity and sensitive data of the organisation</p>
13	logout	The use case of staff logging out of BAPERS

Package: Process

ID	Name	Description
14	processJob	The option to choose which job to work on and process its individual due tasks
15	deadlineExceedAlert	Alert Shift and/or Office manager if the expected time to complete outstanding tasks for any job is likely to exceed the set time period
16	updateStatus	Update status of any given job by recording completion of current task
17	transferJobLocation	When a job progresses from one stage to the next within the laboratory
18	respondToEnq	Respond to enquiries from any computer terminal about the status of a job of all the jobs that are “in progress”

Package: Reports

ID	Name	Description
19	produceCustReport	Report generated for the jobs brought in by a particular customer for an arbitrary period of time as specified at the time of generating the report (e.g. Per month)
20	produceStaffReport	Individual performance report on work undertaken by a member of BIPL staff.
21	producePerfReport	Summary performance report for work undertaken by BIPL during day and night shifts
22	setTime	Setting the time-period to generate the report
23	setCust	Setting the customer account to draft the report from
24	SetStaff	Setting the staff to draft the report from
25	SetTimeOfDay	Setting the shift i.e. night or day shifts

Package: Payment

ID	Name	Description
26	payment	<p>Payment processing and dealing with debtors. The customers are supposed to pay once the jobs they had placed have been completed. Customers can pay by cash or credit/debit card only. Payment records are stored by the system e.g. payment amount and type of payment need to be stored.</p> <p>Key use case: The foundation to all businesses is payment for the service or product provided. Therefore, it would be paramount to record payments for legal as well as accounting reasons. Payment also becomes a crucial activity in BAPERS for valued customers due to bulk paying, this becomes a necessity for growing companies like BIPL.</p>
27	cashPay	Payment for a job via cash
28	cardPay	<p>Payment for a job via card. If a card payment is successful, the following details are recorded too: expiry date, type, and the last 4 digits of the card used. Cash payments are recorded as well.</p> <p>Key Use Case: BIPL is a growing company that is looking to establish a dominant position in the market. This usually means having larger clients that are nationwide, therefore securing card payments becomes a necessity and is key to continuing the excellent customer service. Card payments are also becoming the norm with the utilisation of technology. Because of these reasons cardPay is an essential use case to BAPERS.</p>
29	printReminder	Printing the reminder letters, BAPERS offers the user to print a letter in demand with specific types.
30	reactiveDefault	Office manager has the ability to reactivate an account that was place as default.
31	defaultAccount	Turning the customers' accounts into a default account
32	firstReminder	<p>If a valued customer fails to clear the outstanding balance by the 20 of the next month, they will be sent a reminder letter</p> <p>Key use case: An important requirement for BIPL is to control customers that have outstanding fees linked to their accounts. This can then be used to take legal action with manager discretion. Customers should be notified when unpaid activity has happened on their accounts before such actions to protect company policy. Understanding this, we believe this use case becomes a strong component to keep in control of BAPERS finances</p>

33	latePaymentDetect	An automatic detection that notifies the manager of outstanding payments
34	secondReminder	If a month after the first reminder letter had been sent the outstanding balance has not been cleared, the system will generate a second reminder letter for the customer and automatically suspend their account
35	suspendAccount	Account is suspended after the first reminder letter

Package: Admin

ID	Name	Description
36	setCustValue	<p>Set customer account as valued customer which sets them up for discount plans</p> <p>Key usecase: As justified the importance of discount for BIPL, this is a crucial use case to identify the customers who deserve the rewards and discount. The allows BIPL to select the right customers, set discounts and continue business with them.</p>
37	removeCustValue	Remove value upgrade from customer account
38	setDiscount	<p>The Office Manager can decide to give loyal customers a discount which only available to valued customers. A valued customer can be associated with only a single discount plan at any given time. BIPL see the need for three different types of discount plans to be made available in BAPERS for valued customers; fixed discount, variable discount and flexible discount</p> <p>Key usecase: One way of building a loyal customer base which is a high priority to BAPERS is through rewards and discounts. Allowing the use of loyalty rewards keeps current customers as well as appealing to new customers. We believe that this use case will be a mechanism that allows to fulfill the customer satisfaction level BIPL promises.</p>
39	removeDiscount	The office manager has the ability to remove the set discount at any time
40	createStaff	<p>A new staff account can be created for the users of BAPERS. This gives the option to select from the different types of staff e.g. technician or receptionist...</p> <p>Key use case: The ability to control and create staff helps BIPL not only to expand as a company which is a long-term goal for every business, but to continue the business process which means losing and gaining staff. We believe it is in the best interest to value this use case as a key mechanism of BAPERS.</p>
41	setPrivilege	Organise the level of authority and priority assigned to a staff members account
42	setAccountDetails	Assign various types of contact details (including name, address, phone, discount rate, etc)
43	restoreFromBackup	Staff should have the ability to restore the database on demand and the system should be able to restore automatically.

44	setBackup	Ability to choose from Backup and Restore
45	backupDatabase	<p>Staff have the ability to back up the current data of BAPERS, should be able to be restored automatically or manually.</p> <p>Key use case: Every organisation should be able to back up their systems successfully to an external drive or the cloud, this becomes a backbone to the company. Especially useful during disasters that happen both internally, and externally, backing up regularly ensures proper quality management and restoration.</p>

7.Risk Analysis

Use Case	Priority	Risk
Package: Job		
printReceipt	Medium	<p>If the printed receipt shows the incorrect information, this could be due to a programming fault. This may be the result of having unmaintainable code, which therefore becomes more difficult for the fellow developers to read, and to add future functionality to.</p> <p>As a consequence of this, time and money is wasted trying to work with inefficient code which also has adverse effects on the project budget and meeting the project deadline</p>
printLabel	Medium	<p>If the receptionist records the wrong information, thus printing an incorrect label, this could cause a mix up between the materials submitted by the customers. This therefore affects implementing an operation such as printLabel due to it causing an effect on the time. As a result, the company will not be able to meet the needs of the customer.</p>
markJobAsUrgent	High	<p>A potential risk could be the job has been marked incorrectly in terms of priority. E.g. an Urgent job is marked with Normal priority. Not only that but also, the job with Urgent priority has taken longer than 6 hours to be completed, hence the risk of incompleteness due to more time being required than usual. A potential customer could be lost due to their priorities not being achieved with that of the company's values that were set out.</p> <p>Resulting in potential budget increase, as if the same circumstance occurs numerous amounts of times, this could cause increased prices as the company will have less customers and thus less sales occurring. Therefore, not allowing the company to achieve economies of scale and resulting in material being more costlier to produce. Which in turn will increase the budget.</p>
recordDeadline	High	<p>An incorrect deadline date has been recorded by the receptionist therefore leading to the job not being completed on time. This in turn, affects the reputation of the company as the job had a time delay affecting the job order. Alternatively, this would also affect the receptionist and staff as the time</p>

		spent on the incorrect deadline could have been spent on processing another job order to complete.
acceptJob	Low	The receptionist accidentally declines job and fails to deliver. Because of this a potential budget decrease occurs and this could cause the company having to increase prices due to the lack of jobs being accepted and acknowledged therefore resulting in less customers and thus less sales occurring
alertNewJob	High	A potential risk could be that the system is alerted with an old job or perhaps the new job is no longer acquired. Hence, the company identifies a risk of money, as the old job has been dealt with by professionals who in turn, could have used that time in dealing with the new job. Furthermore, A huge time problem occurs as if valuable time and knowledge is applied for the new job which is then not required, it will lead to wastage.
addSpecInst	Medium	The receptionist records the wrong the instructions. Therefore, the customers special instructions have not been processed and as a result, the company has a risk of losing customers. The company has to be prepared to deal with customers who have a plethora of special instructions thus taking a myriad of time which could be spent elsewhere for example recording the appropriate deadline.
AssignJobID	Low	The job assigned has potentially a wrong job number or perhaps does not have a number at all. As a result, there is a risk of there being a job mismatch that the company must deal with, leading to time problems. Furthermore, the company must be prepared to deal with the risk of each job not being assigned a specific id, thus requiring staff to complete the job - which in turn requires extra money.
IDExisitingCust	Low	Identifying the incorrect customer account is a huge risk as there is a time problem to deal with as if it is incorrect, the staff must complete the appropriate checks and requirements in order to meet the needs of the customer. The company must be prepared to deal with the time and budget risk as they will have to recreate an account for the customer if it is incorrect which will require money.
createCust	High	The incorrect customer account was created for the individuals using BIPL. The risk with this in terms of time is that the staff has to create (again) the correct customer account with the relevant details when in turn this time could have been used for the next part in making the customer feel valued. In terms of budget, this does not have much effect, however in the view of a customer, they may not feel satisfied, and therefore give a bad rating.

applyDiscount	High	A potential risk could be applying the wrong amount/type of discount for the customer. Hence, the company identifies a colossal risk of money as if the incorrect discount is applied, the company can lose out on a plethora of money. Although this results in the customer with a great experience, financially the company gains a loss. (Vice versa).
Package: Login		
login	High	User may be unable to login to the system due to incorrect details. Although a lot of time is required to create a login option, there is a risk of not being able to login into BAPERS to access the system. Hence, numerous amount of time and money must be inputted in accessing the login thoroughly. If the Login is not dealt with care, the company will lose out on a lot of money.
logout	High	Failure in logging out can risk the system being used by other users. Although the importance of logging out of the system may not be as important when implementing, there is still a risk of the budget being used. I believe the functionality of the logout function does not require a lot of work, thus not being a time problem as only a short period of time is required in implementing it.
Package: Process		
processJob	High	The incorrect job is worked on and processed as well as the incorrect individual task is chosen. This is a huge risk as co-workers can cause misunderstandings between each other, as a result this could cause jobs to be completed when in turn they are not acquired to be completed, hence causing money problems as it has been spent on the incorrect job which decreases the budget. Not only that, but valuable time is spent into jobs being processed that were completely wrong.
deadlineExceedAlert	High	If a deadline date is likely to exceed or is outstanding, there is a risk of the job not being completed within the set time period. This in turn, affects the reputation of the company as the job had a time delay affecting the tasks complete. Alternatively, this would also affect the receptionist and staff as the time spent on the completing the alert could have been spent on processing another job order to complete. Ideally, this should have been dealt with prior to receiving the alert
updateStatus	Medium	Updating the status of a job requires a fair amount of time/priority as the staff members of BAPERS need to ensure that they know the current situation of the job. Not only that,

		but they need to acknowledge that the appropriate job is updated by viewing the status ever so often. However, the company does have to deal with the time constantly being used up upon updating the system.
transferJobLocation	High	If the job fails to progress from one stage to the next within the laboratory, this can cause a risk as it will hold other job2s to be held back. This will in turn unable the job to progress onto the next stage. Consequently, this will cause money problems as the company will not be able to produce the relevant job in time.
respondToEnq	Medium	The vital risk to consider here would be the computers not being able to operate the enquiry for the system coherently. Additionally, a lot of time is required to be spent on responding to certain enquiries to ensure all jobs are being completed to a high standard to ensure the customers are left satisfied.
Package: Reports		
produceCustReport	Low	The incorrect report generated for the job of a customer. A consequence of this is that the customer has a high probability of receiving a different/wrong report. Which in turn affects the customer satisfaction due to the company not producing the correct report or content. The company must identify time problems and be prepared to deal with the consequences of receiving a low rating from customers. Thus, resulting in losing money.
produceStaffReport	Medium	The incorrect report generated for the job of a staff. A consequence of this is that the staff has a high probability of receiving a different/wrong report. Which in turn affects the staff satisfaction due to the company not producing the correct report or content. The company must identify time problems and be prepared to deal with the consequences of receiving a low rating from staff. Thus, resulting in losing money.
producePerfReport	Medium	An imperfect performance report generated. A consequence of this is that it has a high probability of receiving a different/wrong report. Which in turn affects the company reputation and satisfaction due to the company not producing the correct report or content. The company must identify time problems and be prepared to deal with the consequences of receiving a low rating from customers. Thus, resulting in losing money.
setTime	Medium	Setting the incorrect time-period to generate the report. The risk here is that the report details can be intercepted by an incorrect date and time, which could in turn cause staff and customers and other external sources to leave, which could be

		vulnerable for the company to deal with. This severely affects the time to implement as it creates a knock-on effect as jobs will not be recorded, therefore not be reported.
setCust	Medium	Setting the wrong customer account to draft the report from. This requires a fair amount of priority because you are setting a customer account and ensuring all details are noted correctly. However, the risk this can cause is that the system can hold the incorrect details of the customer and the company may need to contact them urgently but are unable to do so due to the incorrect details set for the customer initially. This will therefore result in time lost to alter the customer account
SetStaff	Medium	Setting the incorrect staff to draft the report from. This requires a fair amount of priority because you are setting a staff to draft a report and ensuring all details are noted correctly. However, the risk this can cause is that the system can hold the incorrect details of the customer and staff and the company may need to contact them urgently but are unable to do so due to the incorrect details set for the customer/staff initially. This will therefore result in time lost to alter the staff report account.
SetTimeOfDay	Low	<p>The incorrect shift has been set i.e. night and day shift has altered. The risk here is that the staff may have believed they are working another shift time, this can in turn results in money being lost by the company as the incorrect staff may be working in the wrong department, or perhaps no staff will be available to deal with the customers.</p> <p>The problem to identify is taking valuable time in setting the correct shift, as if this is done incorrectly, a huge money problem will arise regarding staff.</p>

Package: Payment		
payment	High	<p>As each transaction is recorded whether it be via cash or debit/credit card, confidential customer details need to be stored. Details such as the expiry date and the last 4 digits of the card being used. The risk here is if these if these details were somehow intercepted by an unknown, unauthorised external source then it could leave customers vulnerable to identity fraud which reflects negatively on the company.</p> <p>Extra care and thus more time will need to be spent on implementing this functionality, ensuring the correct security is in place which doesn't leave data exposed to hackers/intruders. Implementing the relevant security will require a different set of specialist skills when compared to a programmer of a specific language as knowledge of cybersecurity is required. As a result of this, more people may need to be hired in order to implement this functionality which has adverse effects on the project budget.</p>
cashPay	High	<p>Details such as the customer's name will need to be stored when paying by cash. The risk here is if these if these details were somehow intercepted by an unknown, unauthorised external source then it could leave customers vulnerable to identity fraud which reflects negatively on the company.</p> <p>Extra care and thus more time will need to be spent on implementing this functionality, ensuring the correct security is in place which doesn't leave data exposed to hackers/intruders. Implementing the relevant security will require a different set of specialist skills when compared to a programmer of a specific language as knowledge of cybersecurity is required. Because of this, more people may need to be hired in order to implement this functionality which has adverse effects on the project budget.</p>
cardPay	High	<p>Details such as the expiry date and the last 4 digits of the card being used need to be stored. The risk here is if these if these details were somehow intercepted by an unknown, unauthorised external source then it could leave customers vulnerable to identity fraud which reflects negatively on the company.</p> <p>Extra care and thus more time will need to be spent on implementing this functionality, ensuring the correct security is in place which doesn't leave data exposed to hackers/intruders. Implementing the relevant security will require a different set of specialist skills when compared to a programmer of a specific</p>

		language as knowledge of cybersecurity is required. As a result of this, more people may need to be hired in order to implement this functionality which has adverse effects on the project budget.
printReminder	Medium	<p>The risk of allowing the Office manager to print the reminder letters is the adverse effects it has on budget regarding having to repeatedly buy ink and printing paper for each printer.</p> <p>The time taken to order new stationary supplies to the office, such as new printing paper and ink delays the Office manager in completing this action.</p>
reactiveDefault	High	<p>The risk of re-activating a default account is that the customer has a high probability of falling into late repayments again which therefore means the company is not being paid which negatively affects budget.</p> <p>If the customer falls behind on payments again then the company is wasting time chasing the same person by sending them the same letters and reminders they received before.</p>
defaultAccount	High	<p>The risk of putting a customer account into a default state is the overall loss of time and profit to the company due to the customer not being able to pay for their requested job. Time and resources would have been spent by the company to complete the customer's job which would be a waste if the company fails to be paid.</p> <p>Also, if the company wishes to take legal action against the customer, legal fees can be expensive which negatively affects budget.</p>
firstReminder	Medium	The risk of having a first reminder is if the customer's details are incorrect, extra time needs to be spent to make sure the correct customer information is displayed on each reminder, so the reminder is sent to the correct customer
latePaymentDetect	High	The risk of detecting late payments is that developers of the system need to make sure that it is actually late payments that are being detected and not falsely accusing paying customers. This functionality will be heavily tested before its deployment to see if works as initially planned. The stress testing phase of this will take extra time to complete
secondReminder	High	The risk of having a second reminder is if the customer's details are incorrect, extra time needs to be spent to make sure the correct customer information is displayed on each reminder, so the reminder is sent to the correct customer. This is particularly important as this is the last reminder before the account is put into default and legal action is considered.

suspendAccount	High	The risk of suspending an account is to make sure there is an effective algorithm in place to find the customer amongst a database full of customers that needs to be suspended in order to save time in finding the right one.
Package: Admin		
setCustValue	Medium	Accidentally setting a customer account as regular and valued. This in turn does not help them for discount plans. The risk of this is that the customer may not feel satisfied or prioritised due to them wanting to be a valued customer but the company not providing the relevant discounts or benefits. Therefore, time is particularly required to ensure certain customers deserve the best possible service.
removeCustValue	Medium	Unable to remove or forgets to remove the valued upgrade from customer account. The company has to identify that this is an issue as an unvalued customer is getting the discounts and benefits of a valued customer, thus losing out on money. Not much time is required to remove the value of a customer, however the staff need to ensure it is done and completed to so that mistakes are prevented.
setDiscount	High	The risk of giving a discount is to make sure discounts are implemented such that each valued customer cannot be given multiple discounts at once. This will help to maintain the integrity of the system. If implemented correctly, time may actually be saved here as the Office Manager can only pick one option out of 3 discounts
removeDiscount	Medium	The risk of removing a discount is ensuring the discount is removed from the correct valued customer as if a loyal paying valued customer has their discount removed for no reason they may take their business elsewhere. Thus, having an adverse effect on the company's budget. This functionality will also need to be tested thoroughly before during its development which also takes a great amount of time to complete.
createStaff	High	The risk of creating staff is making sure the correct security is in place to make sure only staff with those privileges can create staff, otherwise this may lead to a possible breach regarding the integrity of the system. Also, the system needs to be developed closely to the set requirements as an inefficient system can lead to high future maintenance costs or even a recall in the worst case, which effects both time and budget of the company.

setPrivilege	High	The risk of setting privileges is having the relevant security place to ensure that staff with fewer privileges than the Office Manager for example cannot execute the same commands. For example, the Receptionist should not be able to assign discounts to valued customers as only the Office Manager has access to that subsystem. During the testing phase of this functionality, the different staff accounts will need to be logged onto, to clarify they have controlled access to the system via the privileges assigned to them. The more time spent in the testing phase is one major tradeoffs of producing a quality system.
setAccountDetails	Medium	Assigning the incorrect types of contact details e.g. incorrect address and phone. This reason this is a risk for the company is due to the fact if the customer has not paid, the company has a policy to send a letter, however if the address is incorrect, this function cannot be applied and therefore, the company will lose out on profits.
restoreFromBackup	High	The risk of restoring data from a backup is ensuring the backup does not overwrite new or existing data in the system. Loss of data including data such as customer information and metadata regarding jobs currently in the system will create chaos for the company running the system. Time will need to be spent trying to retrieve and re-organise the lost data.
setBackup	High	Unable to choose between backup and restore. The risk this could cause the company is that there is no guarantee the database has been backed up successfully, and all the information may not be saved and may cause severe problems when wanting to retrieve the information in the future. This is budget/money problem as a lot of money is spent in implanting the function on the system which may not work effectively.
backupDatabase	High	<p>The risk of backing up the database is depending on where the data is stored, the data will need a level of encryption in place to prevent unauthorised access to confidential data such as customer information. If customers find out their private information has been leaked or accessed by an intruder, they are less likely to use the services offered by that business again, possibly take out legal action against the company which therefore means the reputation of the company will be severely damaged.</p> <p>Time will need to be spent to take frequent backups of the data. A slice of the budget will need to be directed to the cost of constantly maintaining and upgrading the security of the data, as it is integral for the company to run.</p>

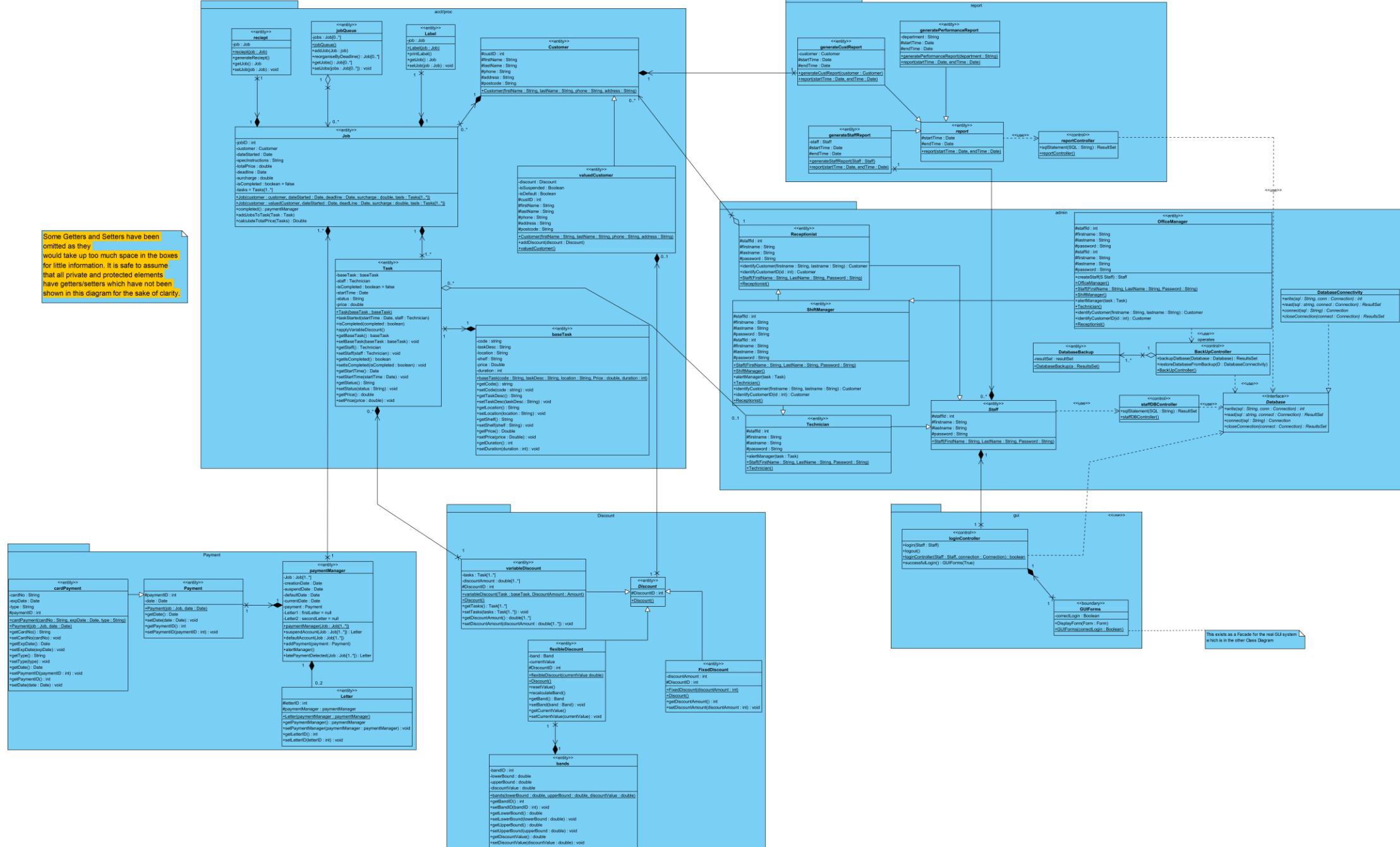
8. System Design

8.1 Design Class diagram

A fully refined Design class diagram has been included within this documentation to:
Display the structure of the system, this has been shown by the system's classes, attributes,
operations and the various types of relationships amongst the objects.

All classes (Entity, Boundary, Control) and associations (roles and navigability) have been included.
Cardinalities, methods and attributes have also been engraved within the system, alongside a
complete set of detailed operations and attributes. Furthermore, packages have been involved and
the interfaces between sub systems.

Design Class Diagram has been shown below:



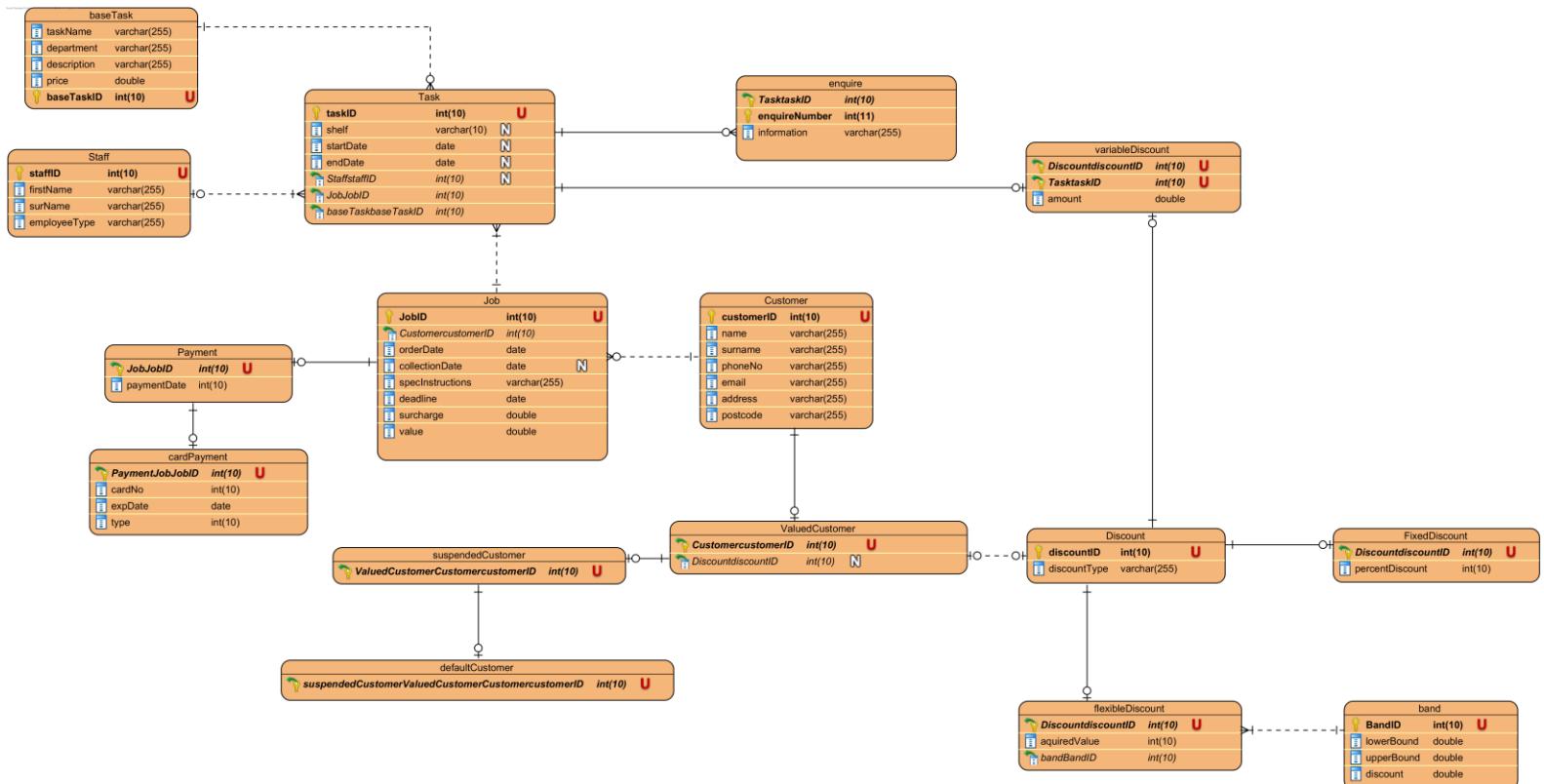
9. Entity Relationship Diagram

An Entity Relationship Diagram has also been included within this documentation to:

Show a structural diagram which will be used towards the database design. The ER diagram consists of all the important entities, attributes and relationships.

Furthermore, all symbols and connectors have been used efficiently throughout the diagram to display all the essential and required information.

Entity Relationship Diagram has been shown below:



10. GUI Design

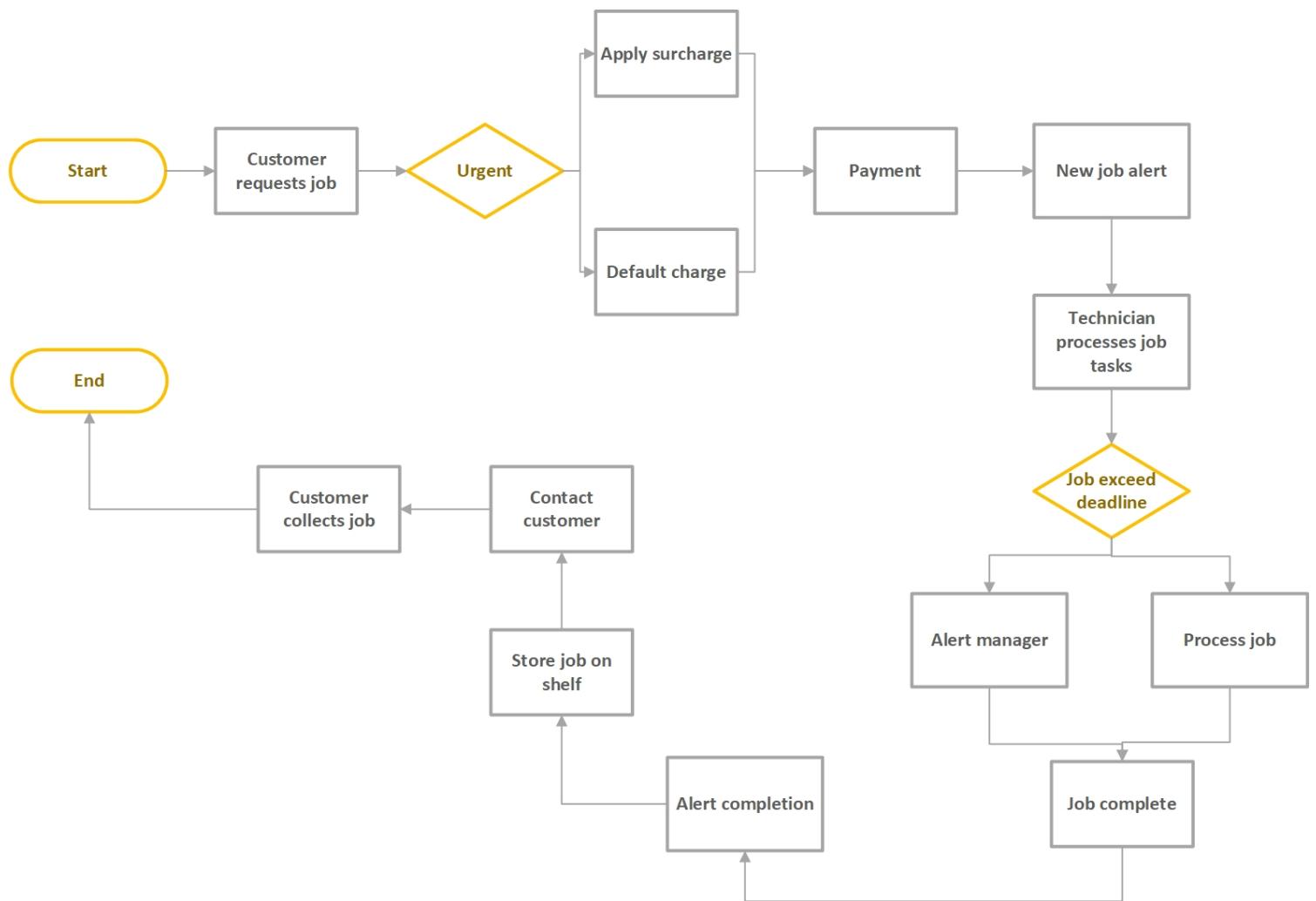
10.1 Flow Chart

Various flow charts have been included within this documentation to:

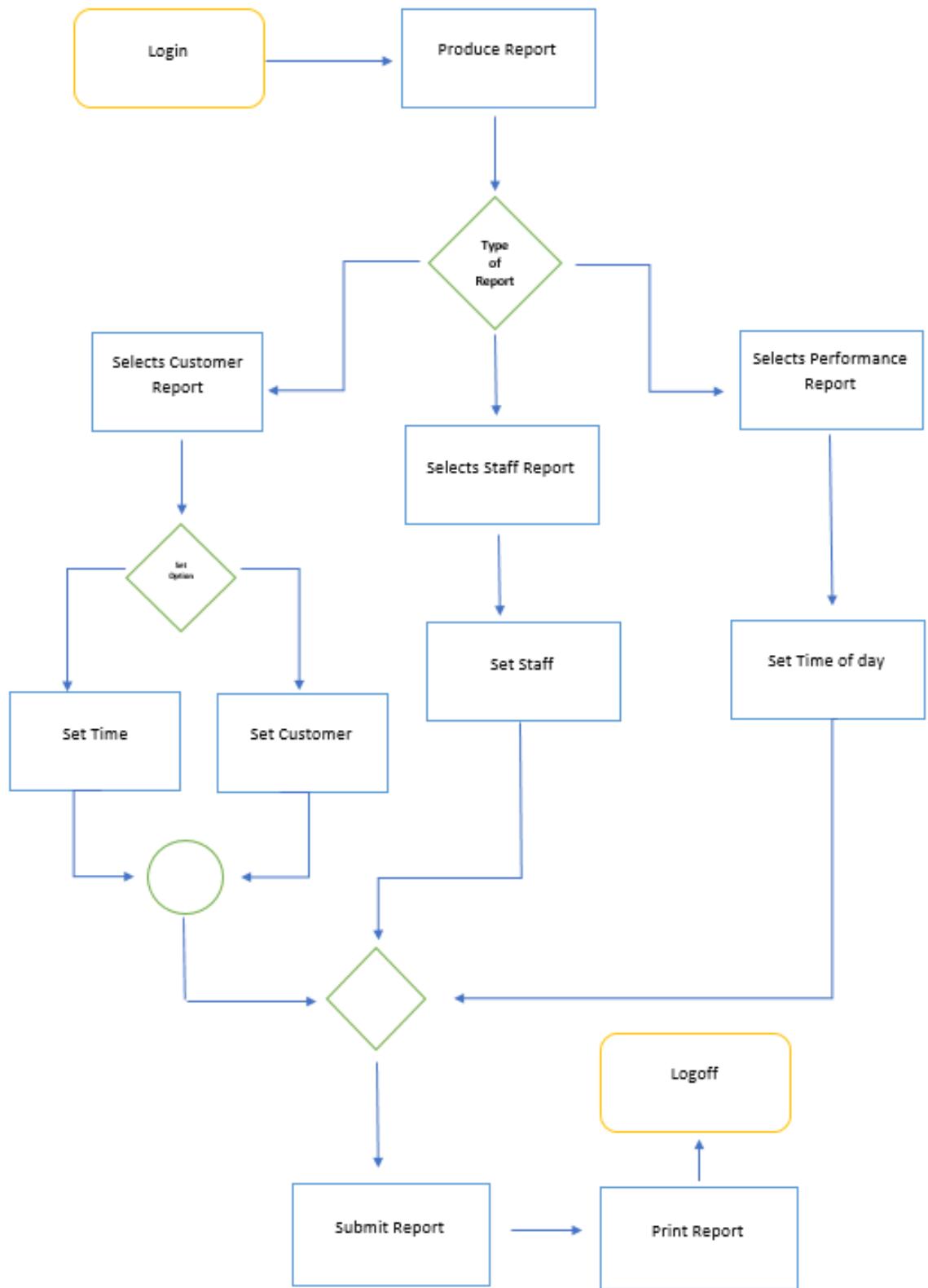
Show a visualisation of the step by step processes each User of the system undertakes. Processes have been represented by different symbols and each process contains short descriptions. Furthermore, all symbols have been connected via arrows to demonstrate flow direction.

Flow Chart's have been shown below:

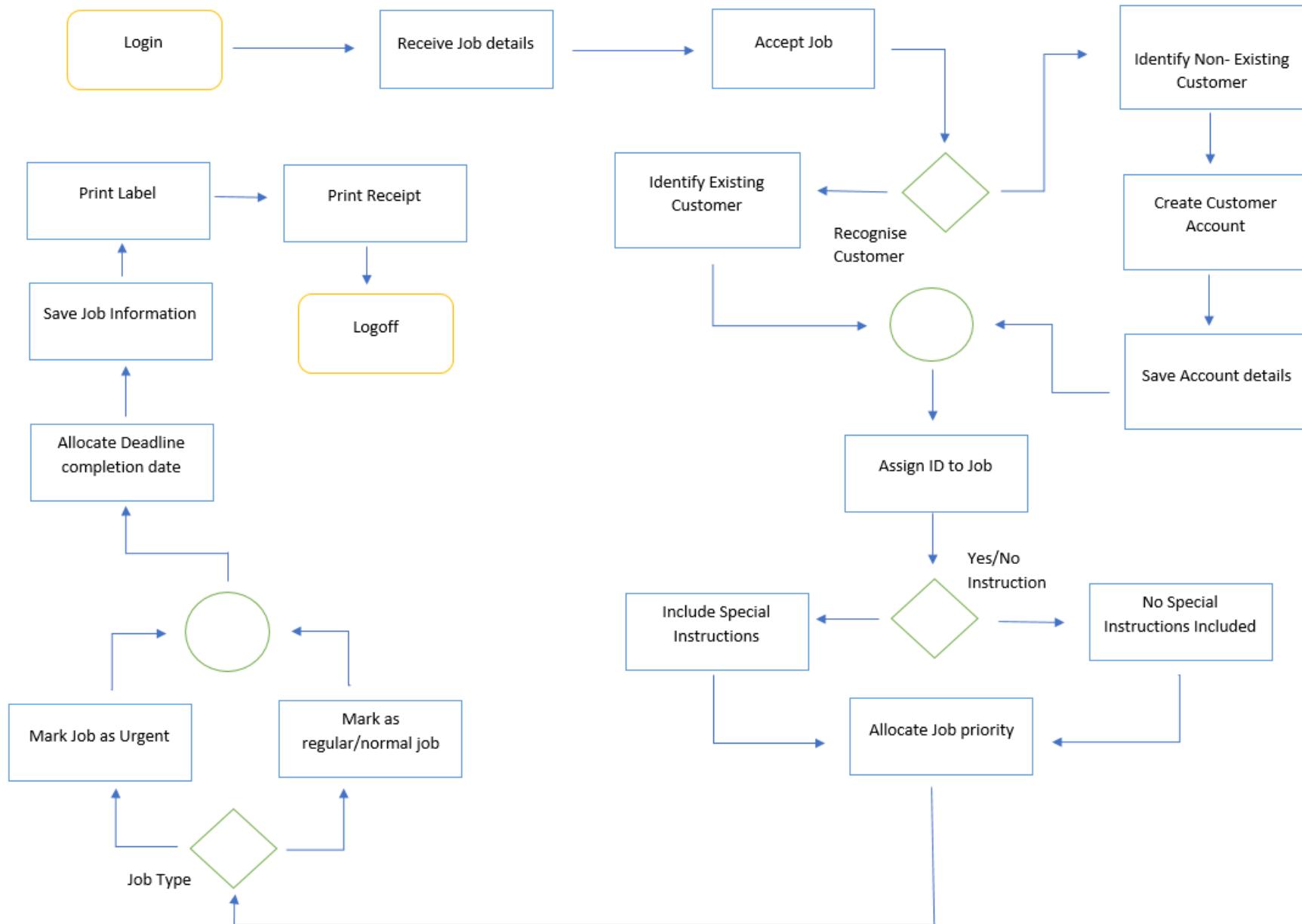
Process Flow Chart



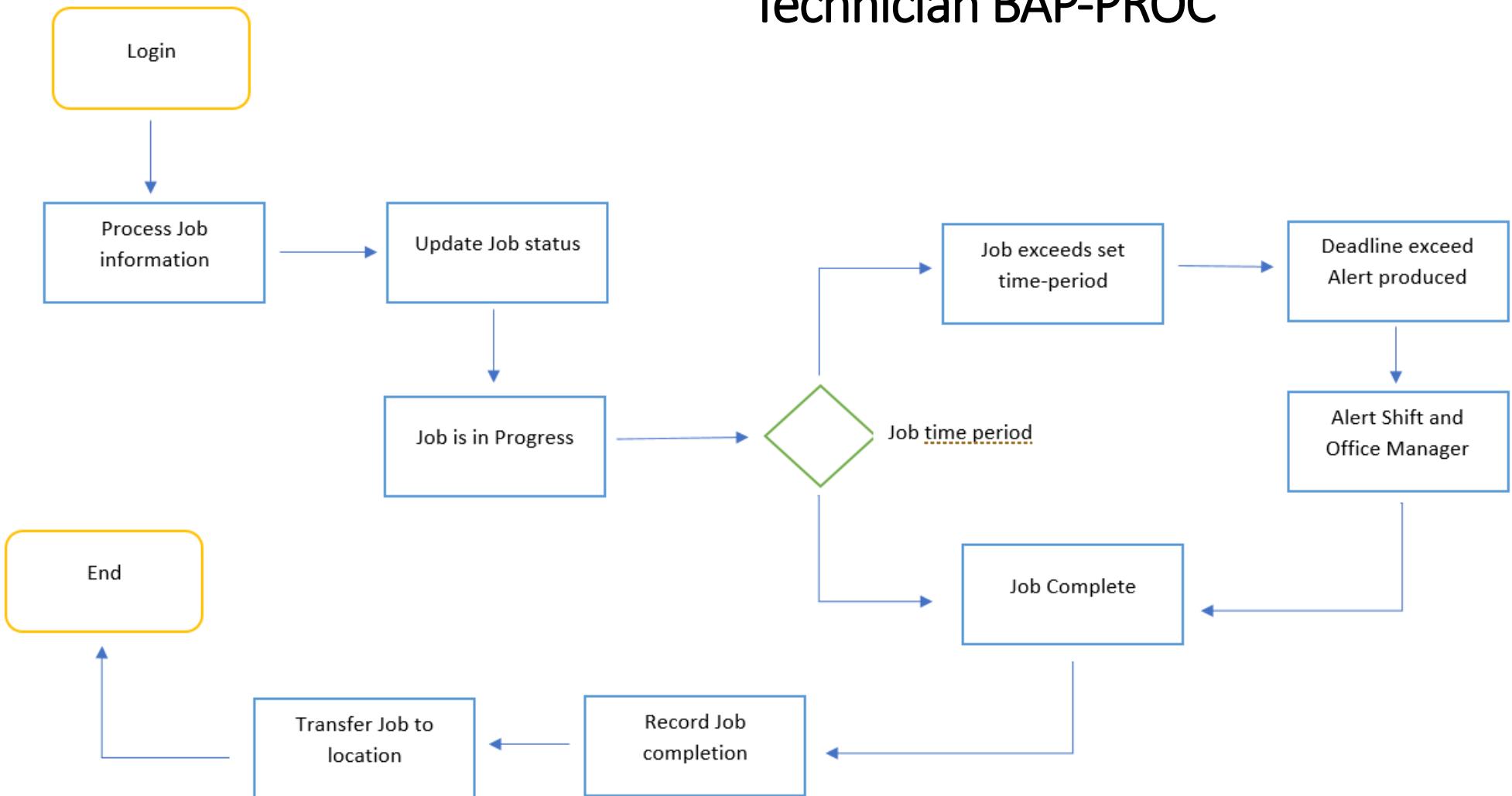
Shift Manager- BAP-REPT



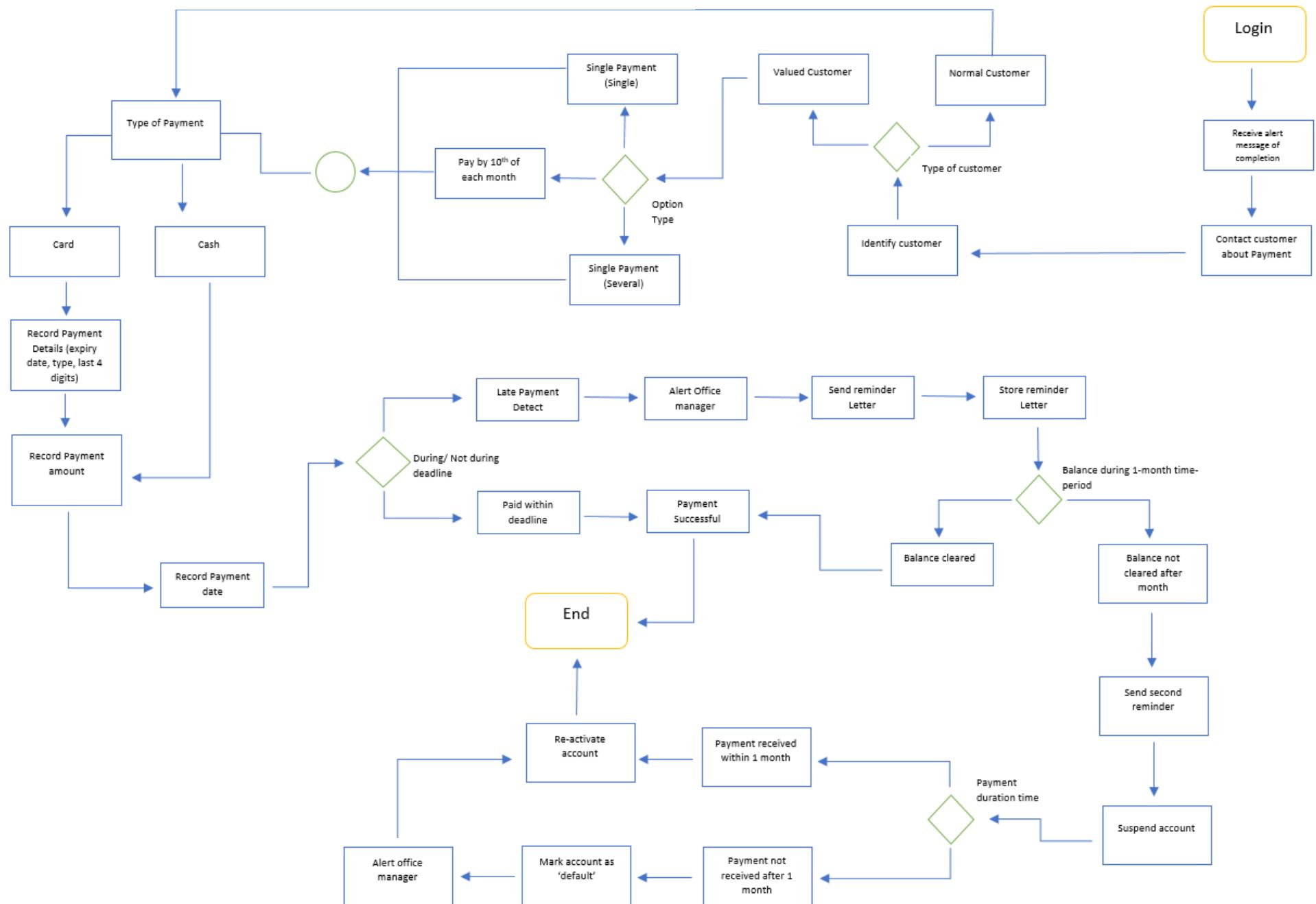
Receptionist- BAP-ACCT



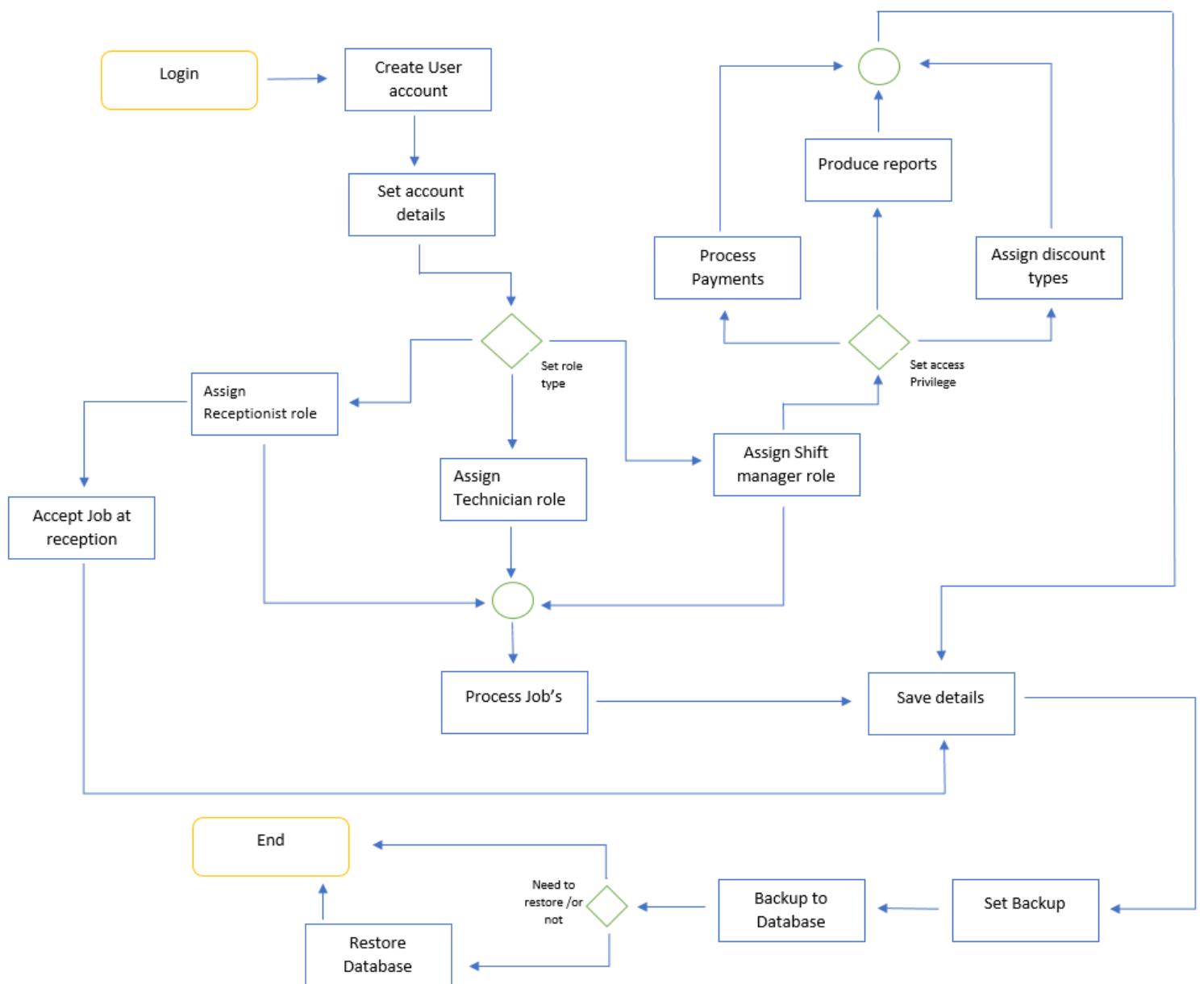
Technician BAP-PROC



Office Manager- BAP-PAYM



Office Manager- BAP-ADMN

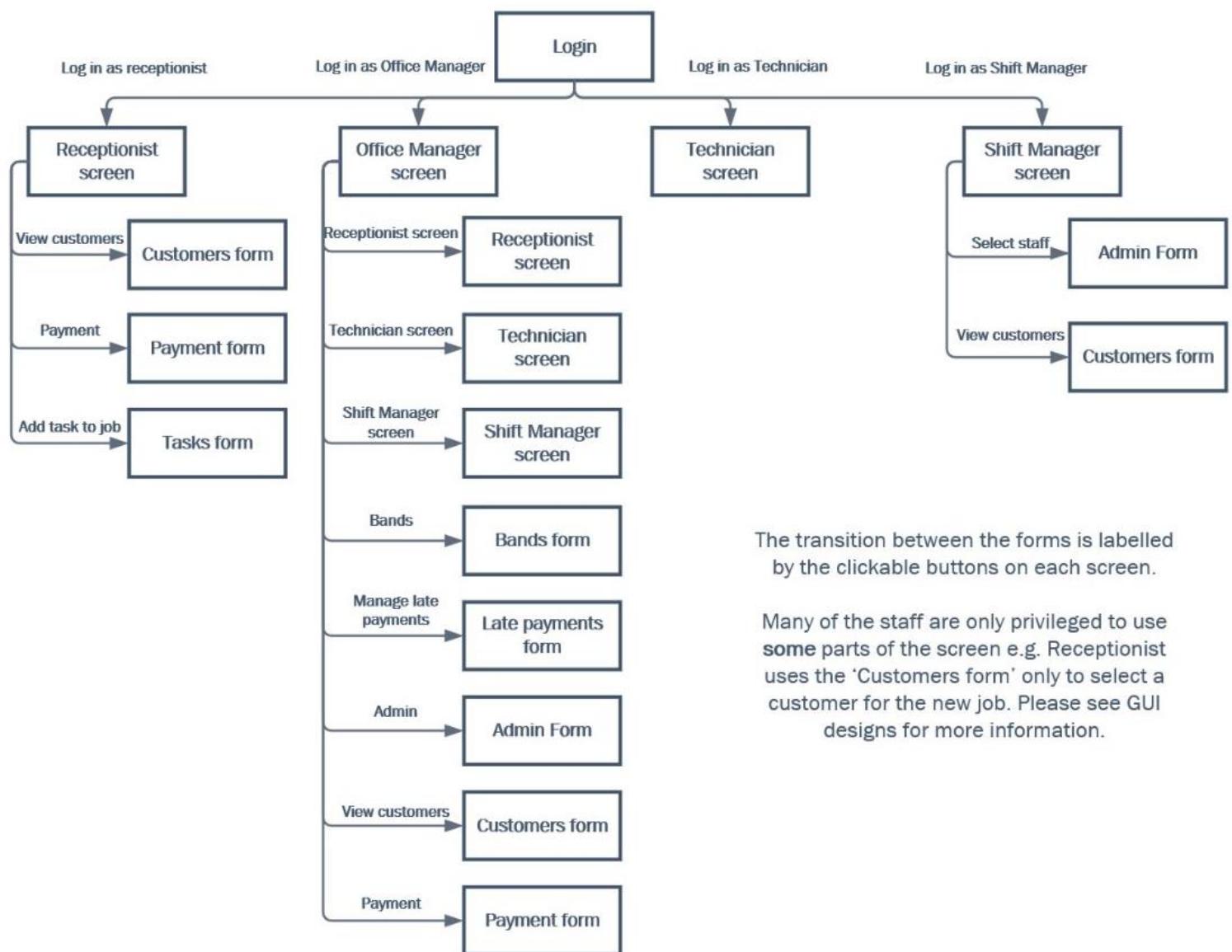


10.2 Site Map

Site Map has been included within this documentation to:

To portray a visualisation of the steps the user takes navigating through BAPERS. Each rectangle represents a form (screen) and the arrows represent the transition. Each arrow is represented by buttons, which are directly portrayed in the class diagram. Furthermore, all symbols have been connected via arrows to demonstrate flow direction.

Site Map has been shown below:



10.3 Wireframe

Wireframe is a blueprint to the skeletal framework of the system/website. They allow a structural and simpler view to visualise the; layout, contents and functionality. The wireframe below shows a simple and robust view of BAPERS with drop marks to further clarify the design.

◀  **Login**

-  Receptionist screen
-  Tasks form
-  Technician screen
-  Shift manager screen
-  Office Manager
-  Customers form
-  Payment form
-  Late Payments
-  Admin form
-  Bands form

Bloomsbury's Image Processing Lab ➔

ID 1

Password 2

3

1: The login for BAPERS. Each user's login will take them to their respective screen. e.g. receptionist login will take them to receptionist screen.

Receptionist ➔ 1

New job 2

Select customer 3 1034 J.Smith Discount: Fixed

Name Phone Address

Surname Email Postcode/ZIP 4

Add customer

Tasks	Task ID	Task Desc	Location	Shelf	Price (£)	Duration (min)	Discount
	2	Black and white film processing	Development area	DR12	49.50	60	X%
	5	Colour transparency processing	Development area	DR100	110.30	180	X%

5

Special instructions

Urgent Stipulated Deadline 6

Price: £XXXX.XX

7

Current Jobs

ID	Customer	Status	Location	Deadline
34	M.Lark	Use of small copy camera	Copy Room	22/02/19
Etc.	Etc.	Etc	Etc.	Etc

Notification bar

- 1:** Log out button, this is also available to all users in their respective screens.
- 2:** During accepting a job, the receptionist has the ability to use an existing customer through this button. The button opens the customer form. The receptionist can select the user from the list by clicking on it. The customer is updated (1034 J.Smith, Discount: Fixed). **The receptionist does not have the privilege to view anything else on the customer form except from the table of customers.**
- 3:** If it is a new customer, the users have the ability to fill in the boxes and add them to the customers list.
- 4:** This is the tasks that are being added on to the current job for J.Smith. The receptionist has the option to delete the tasks by pressing the X icon next to it.
- 5:** If the receptionist needs to add more tasks to the job they can select it from the tasks screen. By pressing this button, the receptionist gets taken to the tasks screen and ever double click adds it to the table.
- 6:** This is the final button to add the job to BAPERS. When this button is clicked, BAPERS is notified. The payment button also takes the receptionist to 'Payment' form to process payment if needed.
- 7:** This is the notification bar, this allows the staff in BIPL to stay connected.

BIPL Tasks					
Task ID	Task Desc	Location	Shelf	Price (£)	Duration (min)
1	Use of large copy camer	Copy room	CR25	19.00	120
2	Black and white film processing	Development	DR12	49.50	60
3	Bag up	Packing departments	PR10	6.00	30
4	Colour film processing	Development area	DR25	80.00	90
...	Etc...	Etc...	Etc...	Etc...	Etc...

Add new task to BIPL

Task Description Shelf Duration

Location Price

The second part of the screen is not purely visible to office managers

- 1:** This is the table that inherits all the tasks in BAPERS. The receptionist has the ability to view the table and select the tasks for the job **however the receptionist does not have the ability to configure the second half of the screen i.e. not able to add tasks to BIPL.** This function is only available to Office Managers.

2: This is the function of adding new tasks to BIPL (**only visible if logged in as an Office Manager**). By filling in the fields and clicking on the add task to BIPL button, the table will be updated with the new respective task.

The screenshot shows the BIPL Technician interface. At the top, there's a header 'Technician' and a back arrow icon. Below it is a table titled 'Select job' with columns: ID, Customer, Status, Location, and Deadline. A pointer arrow (number 1) points to the first row (ID 34). Below the table are navigation arrows (< and >). Underneath the table, it says 'Selected job: 34'. To the left, there's a 'Current task' box containing 'Use of small copy camera' (pointer arrow 2). To the right, it says 'Performed by: Alan'. Below these are 'Next task' boxes for 'Colour film processing' and 'Update task' (pointer arrow 3). Further down is an 'Enquiry box' (pointer arrow 4) with a message from 'Jay' asking about task completion. To the right is another enquiry box (pointer arrow 5) with a response to 'Jay' about the deadline. Navigation arrows (< and >) are at the bottom of the enquiry boxes.

Select job	ID	Customer	Status	Location	Deadline
→	34	M.Lark	Use of small copy camera	Copy room	22/02/19
	27	A. Peterson	Mount transparencies	Finishing room	03/03/19

Selected job: 34

Current task Use of small copy camera 2

Performed by: Alan

Next task Colour film processing 3

Update task

Notify deadline exceed

Enquiry box 4

From: Jay
Alan have you completed task 6 for job 34?
Let me know ASAP, customer is ready to collect!
Thanks.

To: Jay
Deadline is going to exceed for job 34. There is still 1 task left. I have notified both managers.
Thanks

Respond

< Previous Enquiry > Next Enquiry

1: This is the table of all the jobs in BAPERS. The technician has the ability to select one to work on. In this instance the first job is selected (a pointer arrow is visible on selected job). The body of the form is updated with the respective job.

2: In this section the technician has the ability to update the current task to the next one. This is done by clicking on the button “update task”.

3: If the possibility of deadline to exceed is apparent, the button is pushed and a notification is sent in to BAPERS.

4: The enquiry box allows the technician to answer all possible enquiries about the jobs. The technician has the ability to see different messages being sent.

5: This is the other half of the enquiry box in which the technician can respond to the enquiries by sending a message through BAPERS.

Performance report

From To

Day shift Night shift

Select department

Copy room Finishing Packing Development

Staff report

From To

ID	Name	Role

Selected staff

Generate staff effort report

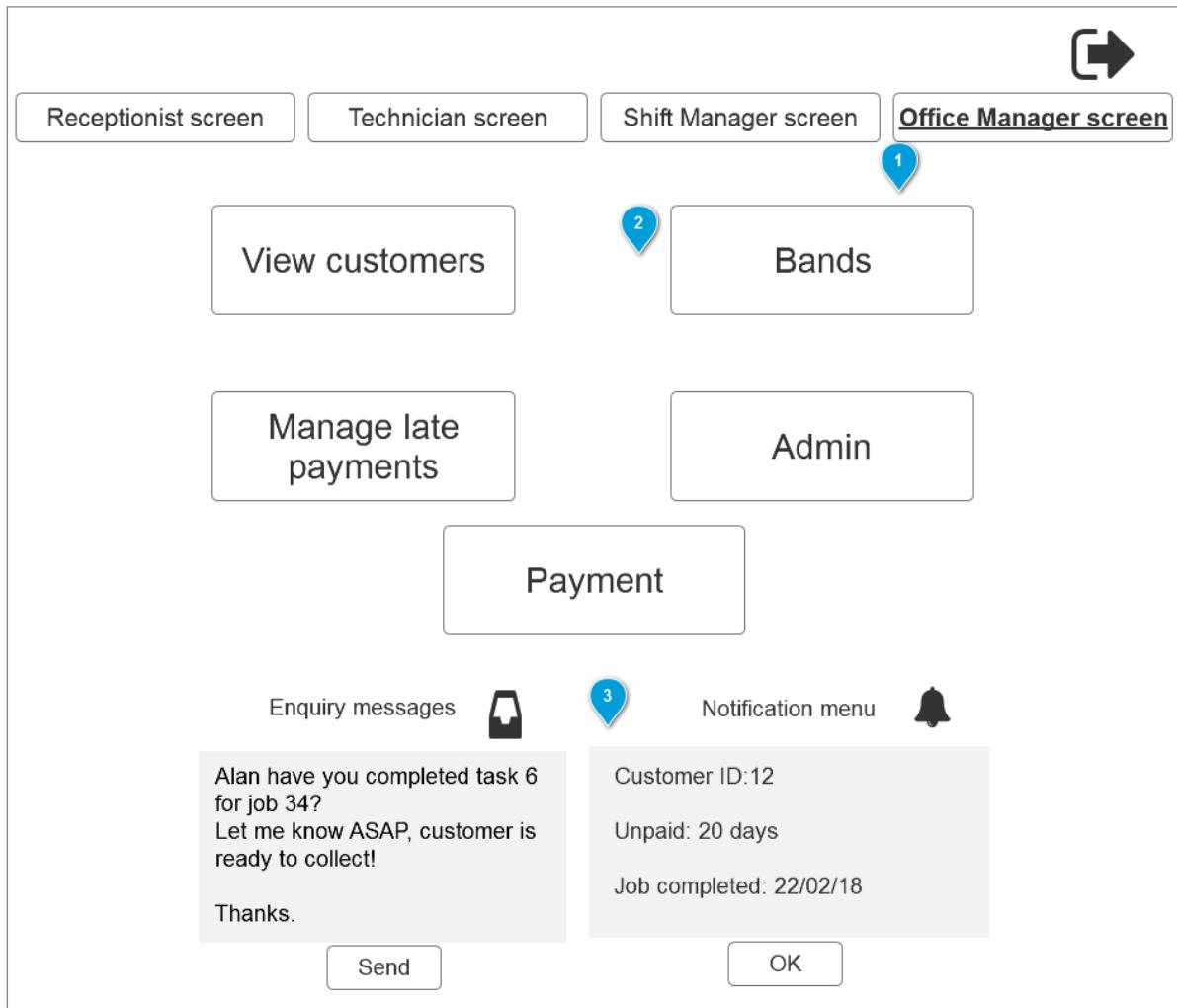
Customer report

From To

Selected customer

Generate customer report

- 1:** This is a navigation bar that is apparent in the shift managers screen. The shift manager has the ability to switch to the different screens of staff in BAPERS. The current screen is highlighted in bold.
- 2:** The button after selecting and configuring all the attributes generates the respective report through a spreadsheet.
- 3:** This button takes you to the admin screen, in which you can select the staff to base the report on. **On the admin screen the shift manager however does not have the ability to view or configure the backups section.**
- 4:** Similarly, to the 'add staff' button, this button allows the shift manager to select the customers to base the reports on. **The shift manager does not have the option add/change staff.**



1: The office manager has the ability to view all the screens in BAPERS. Selected screen is highlighted in bold.

2: The office managers screen is presented with a menu in which he can configure the main BAPERS system. Clicking on one of the five buttons will take you to the respective form.

3: In this section the office manager has the ability to send and receive enquiries. In this instance, the enquiries relate to a specific job. The notification menu also has the ability to notify the office manager on late payments.

←
→

Customer accounts									
Customer ID	Name	Surname	Email	Phone	Address	Postcode/ZIP	Valued	Discount	
17	Mark	Bowns	m.bowns12@gmail.com	+4474545454321	41 Goswell Road	N12 4RR	Y	Fixed	
11	Joanne	Kohli	jojo99@hotmail.com	+4423458973241	33 Edward Avenue	EN3 4DA	N	N/A	
19	Bob	Ross	brss12@hotmail.com	+4476567435432	69 Springbill Street	N17 RR1	Y	Band 1 (2%)	

Add/Edit Customer

Name	<input type="text" value="Joanne"/>	Phone	<input type="text" value="+4423458973241"/>	Address	<input type="text" value="33 Edward Avenue"/>	Discount	<input type="button" value="Variable"/>
Surname	<input type="text" value="Kohli"/>	Email	<input type="text" value="jojo99@hotmail.com"/>	Postcode/ZIP	<input type="text" value="EN3 4DA"/>	Valued	<input checked="" type="checkbox"/>

Save changes

Suspended accounts						
Customer ID	Name	Surname	Email	Amount (£)	Days overdue	Job ID(s)
17	Maria	Patel	m.patel@city.ac.uk	£411.00	30	[65] [23]
11	Alice	Mayala	mayal23@hotmail.co.uk	£100.00	34	[23]
etc	etc	etc	etc	etc	etc	etc

Default accounts						
Customer ID	Name	Surname	Email	Amount (£)	Days overdue	Job ID(s)
17	Maria	Patel	m.patel@city.ac.uk	£760.00	140	[65] [23]
11	Alice	Mayala	mayal23@hotmail.co.uk	£430.00	120	[23]
etc	etc	etc	etc	etc	etc	etc

The second half of the screen is purely visible to office managers.

1: This is the table for all the customers in BAPERS currently. The receptionist can use this table to select customers for new jobs. The selected customer has a pointer arrow next to it.

2: The office manager can add/edit customers in BAPERS by selecting it. **No other user has the ability to set discounts. This box will be unclickable for every staff except office managers.**

3: The office manager also has the ability to select a customer and edit whether its valued or not. **No other user has the ability to set values. This box will be unclickable for every staff except office managers.**

4: By clicking this button the changes are saved.

5: List of all the suspended accounts on BAPERS.

6: List of all default account on BAPERS. When payment is made, the office manager has the ability to remove the customer from default by clicking on the X icon.

Add a payment


1
2

Select customer	View customer list	1034 J.Smith
-----------------	------------------------------------	--------------

Job ID	Price (£)	Discount	Start date	Tasks	Status	Exceed Deadline
56	247.00	X%	24/02/18	[34] [11] [1]	Completed	N
43	86.00	X%	26/02/18	[4] [3]	Completed	N

Discount: Fixed Price: £XXX.XX

Price after discount: £XXX.XX

Choose a payment type

Date

Currency

Signature 

Date

Type

Expiry date

Last 4 digits

3
4

Payment history

ID	Name	Amount	Method	Job ID(s)
23	Ali Bowns	£420.00	Cash	[2] [43] [32]
17	City University	£120.00	Card	[8]
Etc	Etc	Etc	Etc	Etc

1: This button takes the office manager to ‘Customer’ form to select a customer and process a payment. The selected customer in this instance is “J.Smith”.

2: This table is the jobs the customer has completed and ready to pay.

3: The option to pay by cash or card.

4: When the payment is successful, the payment history will be updated.

→
Current late payments
→

Customer ID	Job ID(s)	Price (£)	Payment due date	Overdue	First reminder	Second reminder
17	[2] [33] [11]	565.00	20/02/18	25 days	✓	✗
44	[34]	85.00	22/02/18	22 days	✗	✗

Selected customer: 44

1: Customer information is written on the left of the button. The button is used to issue and send a reminder to its location. Because customer 44 has not received any reminders, the first reminder is the only reminder that can be issued. The second reminder is unclickable for customer 44.

2: This is the table for late payments. The office manager has the ability to view all the late payments and select it to print reminders. In the table format the tick resembles the reminder has been issued, and the cross resembles reminder hasn't been issued. The pointer is present on the selected customer.

3: The office manager has the ability to modify and configure both the reminder letters. The button save changes applies the changes made to the reminders.

1: This is the table for late payments. The office manager has the ability to view all the late payments and select it to print reminders. In the table format the tick resembles the reminder has been issued, and the cross resembles reminder hasn't been issued. The pointer is present on the selected customer.

2: Customer information is written on the left of the button. The button is used to issue and send a reminder to its location. Because customer 44 has not received any reminders, the first reminder is the only reminder that can be issued. The second reminder is unclickable for customer 44.

3: The office manager has the ability to modify and configure both the reminder letters. The button save changes applies the changes made to the reminders.

The screenshot shows the BIPL Admin application interface. At the top right is a large black arrow pointing right, with a small blue location pin containing the number '1' to its right. Below the header is a table titled 'Bipl Admin' showing staff information:

Staff ID	Name	Surname	Role/Privileges	Status	Date created
11	James	Patrick	Technician	Online	05/09/2016
1	Alice	Peterson	Receptionist	Online	22/10/2016
9	Ali	Baba	Shift Manager	Offline	21/07/16
etc	etc	etc	etc	etc	etc

Below the table is a section titled 'Add/Edit Staff' with fields for Name, Role/Privileges, Date created, Surname, Status, and a 'Save changes' button. A blue location pin containing the number '2' is positioned above the 'Save changes' button.

At the bottom left, it says 'Last back up: 20/02/18' and 'Back up due: 01/04/18'. To the right is a button labeled 'Back up now' with a blue location pin containing the number '3' above it.

On the far left, there is a large black arrow pointing right, with a smaller blue location pin containing the number '4' below it. To the right of this arrow is a table showing system updates:

Date	Version	Performed by
01/02/18	4.1.3	Jay
01/01/18	4.1.0	Jay
etc	etc	etc

To the right of the table is a button labeled 'Restore selected version'.

1: The office manager has the ability to select the staff from the list and edit them. The table resembles all the registered staff in BAPERS.

2: When a staff is selected, the fields will be filled with respective data and the button is used to save changes.

3: The button backs up the whole of BAPERS to an external drive.

4: The table resembles all the updates that are done on the system. The selected update has a pointer next to it and the button restores the system to the respective version.

The screenshot shows a software interface for managing discount bands. At the top right is a back arrow icon. Below it, the word "Bands" is displayed. A large blue callout bubble with the number "1" points to the top row of a table. To the left of the table is a large black arrow pointing right. The table has four columns: ID, Lower bound, Upper bound, and Discount %. The data is as follows:

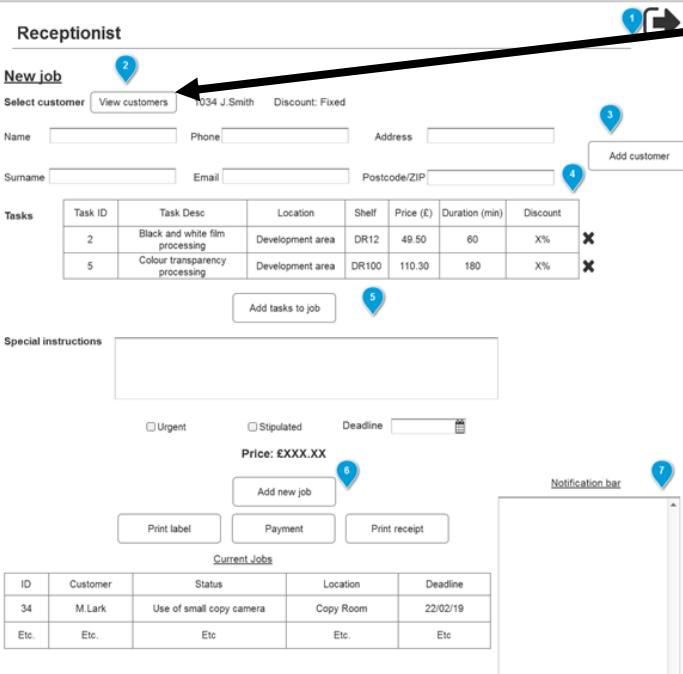
ID	Lower bound	Upper bound	Discount %
1	0	150	1.5%
2	200	600	3%
etc	etc	etc	etc

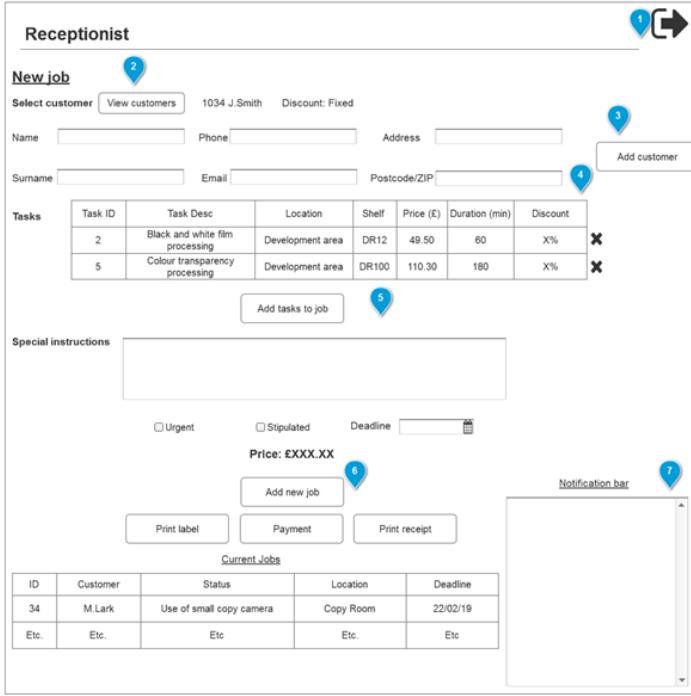
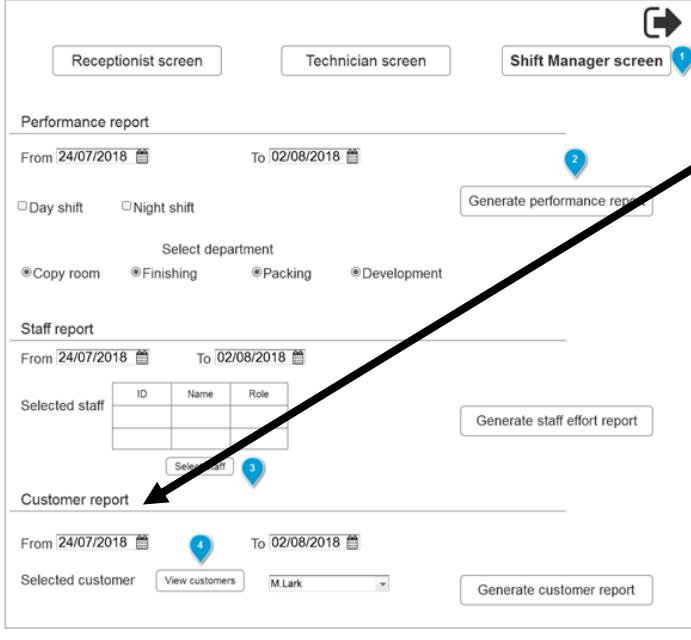
Below the table is a section titled "Add/Edit Bands". It contains three input fields: "Lower bound" (set to 200), "Upper bound" (set to 600), and "Discount %" (set to 3%). To the right of these fields is a "Save changes" button. A blue callout bubble with the number "2" points to the "Save changes" button.

1: Office manager has the ability to view all the bands that are present to all customers.

2: The selected band in this instance it is band 2, can be edited to increase or decrease discount.

10.4 Graphical User Interface Mapping

GUIs	Map
<p>Bloomsbury's Image Processing Lab ➔</p> 	loginForm
<p>Receptionist</p> 	viewCustomer

 <p>Receptionist</p> <p>New job</p> <p>Select customer <input type="button" value="View customers"/> 1034 J.Smith Discount: Fixed</p> <p>Name <input type="text"/> Phone <input type="text"/> Address <input type="text"/></p> <p>Surname <input type="text"/> Email <input type="text"/> Postcode/ZIP <input type="text"/></p> <p>Tasks</p> <table border="1"> <thead> <tr> <th>Task ID</th> <th>Task Desc</th> <th>Location</th> <th>Shelf</th> <th>Price (€)</th> <th>Duration (min)</th> <th>Discount</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>Black and white film processing</td> <td>Development area</td> <td>DR12</td> <td>49.50</td> <td>60</td> <td>X%</td> </tr> <tr> <td>5</td> <td>Colour transparency processing</td> <td>Development area</td> <td>DR100</td> <td>110.30</td> <td>180</td> <td>X%</td> </tr> </tbody> </table> <p>Add tasks to job <input type="button" value="5"/></p> <p>Special instructions <input type="text"/></p> <p><input type="checkbox"/> Urgent <input type="checkbox"/> Stipulated Deadline <input type="text"/></p> <p>Price: €XXX.XX <input type="button" value="6"/></p> <p><input type="button" value="Add new job"/> <input type="button" value="Print label"/> <input type="button" value="Payment"/> <input type="button" value="Print receipt"/></p> <p>Current Jobs</p> <table border="1"> <thead> <tr> <th>ID</th> <th>Customer</th> <th>Status</th> <th>Location</th> <th>Deadline</th> </tr> </thead> <tbody> <tr> <td>34</td> <td>M.Lark</td> <td>Use of small copy camera</td> <td>Copy Room</td> <td>22/02/19</td> </tr> <tr> <td>Etc.</td> <td>Etc.</td> <td>Etc.</td> <td>Etc.</td> <td>Etc.</td> </tr> </tbody> </table> <p>Notification bar <input type="button" value="7"/></p>	Task ID	Task Desc	Location	Shelf	Price (€)	Duration (min)	Discount	2	Black and white film processing	Development area	DR12	49.50	60	X%	5	Colour transparency processing	Development area	DR100	110.30	180	X%	ID	Customer	Status	Location	Deadline	34	M.Lark	Use of small copy camera	Copy Room	22/02/19	Etc.	Etc.	Etc.	Etc.	Etc.	addNewCustomerForm
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34	M.Lark	Use of small copy camera	Copy Room	22/02/19																																	
Etc.	Etc.	Etc.	Etc.	Etc.																																	
 <p>Receptionist screen <input type="button" value="1"/></p> <p>Technician screen <input type="button" value="2"/></p> <p>Shift Manager screen <input type="button" value="3"/></p> <p>Performance report</p> <p>From 24/07/2018 <input type="text"/> To 02/08/2018 <input type="text"/></p> <p><input type="checkbox"/> Day shift <input type="checkbox"/> Night shift <input type="button" value="Generate performance report"/></p> <p>Select department</p> <p><input checked="" type="radio"/> Copy room <input type="radio"/> Finishing <input type="radio"/> Packing <input type="radio"/> Development</p> <p>Staff report</p> <p>From 24/07/2018 <input type="text"/> To 02/08/2018 <input type="text"/></p> <p>Selected staff <input type="button" value="4"/> <input border="1" type="table"/> <table border="1"> <thead> <tr> <th>ID</th> <th>Name</th> <th>Role</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <input type="button" value="Generate staff effort report"/></p> <p>Customer report <input type="button" value="5"/></p> <p>From 24/07/2018 <input type="text"/> To 02/08/2018 <input type="text"/></p> <p>Selected customer <input type="button" value="View customers"/> M.Lark <input type="button" value="6"/> <input type="button" value="Generate customer report"/></p>	ID	Name	Role										customerReportForm																								
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<p>Current late payments</p> <table border="1"> <thead> <tr> <th>Customer ID</th> <th>Job ID(s)</th> <th>Price (£)</th> <th>Payment due date</th> <th>Owed</th> <th>First reminder</th> <th>Second reminder</th> </tr> </thead> <tbody> <tr> <td>17</td> <td>[2] [33] [11]</td> <td>565.00</td> <td>20/02/18</td> <td>25 days</td> <td>✓</td> <td>✗</td> </tr> <tr> <td>44</td> <td>[34]</td> <td>85.00</td> <td>22/02/18</td> <td>22 days</td> <td>✗</td> <td>✗</td> </tr> </tbody> </table> <p>Selected customer: 44</p> <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean euismod bibendum laoreet. Proin gravida dolor sit amet lacus accumsan et viverra justo commodo. Proin sodales pulvinar tempor. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Nam fermentum, nulla luctus pharetra vulputate, felis tellus mollis orci, sed rhoncus sapien nunc eget.</p> <p><input type="button" value="Print first reminder"/> 1</p> <p><input type="button" value="Print second reminder"/> 2</p> <p>First reminder letter 3 Second reminder letter</p> <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean euismod bibendum laoreet. Proin gravida dolor sit amet lacus accumsan et viverra justo commodo. Proin sodales pulvinar tempor. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Nam fermentum, nulla luctus pharetra vulputate, felis tellus mollis orci, sed rhoncus sapien nunc eget.</p> <p><input type="button" value="Save changes"/> 4</p> <p><input type="button" value="Save changes"/></p>	Customer ID	Job ID(s)	Price (£)	Payment due date	Owed	First reminder	Second reminder	17	[2] [33] [11]	565.00	20/02/18	25 days	✓	✗	44	[34]	85.00	22/02/18	22 days	✗	✗	LatePaymentForm																					
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<p>Receptionist</p> <p>addJobForm</p> <p>New job</p> <p>Select customer <input type="button" value="View customers"/> 1034 J.Smith Discount: Fixed</p> <p>Name <input type="text"/> Phone <input type="text"/> Address <input type="text"/></p> <p>Surname <input type="text"/> Email <input type="text"/> Postcode/ZIP <input type="text"/></p> <p>Add customer</p> <p>Tasks</p> <table border="1"> <thead> <tr> <th>Task ID</th> <th>Task Desc</th> <th>Location</th> <th>Shelf</th> <th>Price (£)</th> <th>Duration (min)</th> <th>Discount</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>Black and white film processing</td> <td>Development area</td> <td>DR12</td> <td>49.50</td> <td>60</td> <td>X%</td> </tr> <tr> <td>5</td> <td>Colour transparency processing</td> <td>Development area</td> <td>DR100</td> <td>110.30</td> <td>180</td> <td>X%</td> </tr> </tbody> </table> <p>Add tasks to job</p> <p>Special instructions <input type="text"/></p> <p><input type="checkbox"/> Urgent <input type="checkbox"/> Stipulated Deadline <input type="date"/></p> <p>Price: £XXX.XX</p> <p><input type="button" value="Add new job"/> <input type="button" value="Print label"/> <input type="button" value="Payment"/> <input type="button" value="Print receipt"/></p> <p>Notification bar</p> <p>Current Jobs</p> <table border="1"> <thead> <tr> <th>ID</th> <th>Customer</th> <th>Status</th> <th>Location</th> <th>Deadline</th> </tr> </thead> <tbody> <tr> <td>34</td> <td>M.Lark</td> <td>Use of small copy camera</td> <td>Copy Room</td> <td>22/02/19</td> </tr> <tr> <td>Etc.</td> <td>Etc.</td> <td>Etc</td> <td>Etc.</td> <td>Etc</td> </tr> </tbody> </table>	Task ID	Task Desc	Location	Shelf	Price (£)	Duration (min)	Discount	2	Black and white film processing	Development area	DR12	49.50	60	X%	5	Colour transparency processing	Development area	DR100	110.30	180	X%	ID	Customer	Status	Location	Deadline	34	M.Lark	Use of small copy camera	Copy Room	22/02/19	Etc.	Etc.	Etc	Etc.	Etc	<p>paymentForm</p> <p>Add a payment</p> <p>Select customer <input type="button" value="View customer list"/> 1034 J.Smith</p> <table border="1"> <thead> <tr> <th>Job ID</th> <th>Price (£)</th> <th>Discount</th> <th>Start date</th> <th>Tasks</th> <th>Status</th> <th>Exceed Deadline</th> </tr> </thead> <tbody> <tr> <td>56</td> <td>247.00</td> <td>X%</td> <td>24/02/18</td> <td>[34] [11] [1]</td> <td>Completed</td> <td>N</td> </tr> <tr> <td>43</td> <td>88.00</td> <td>X%</td> <td>26/02/18</td> <td>[4] [3]</td> <td>Completed</td> <td>N</td> </tr> </tbody> </table> <p>Discount: Fixed Price: £XXX.XX Price after discount: £XXX.XX</p> <p>Choose a payment type</p> <table border="1"> <tr> <td>Date <input type="date"/> 02/08/2018</td> <td>Date <input type="date"/> 02/08/2018</td> </tr> <tr> <td>Currency <input type="text"/> GBP</td> <td>Type <input type="text"/> Mastercard</td> </tr> <tr> <td>Signature <input type="text"/></td> <td>Expiry date <input type="date"/> 09/23</td> </tr> <tr> <td><input type="button" value="Add cash pay"/></td> <td><input type="button" value="Add card pay"/></td> </tr> </table> <p>Payment history</p> <table border="1"> <thead> <tr> <th>ID</th> <th>Name</th> <th>Amount</th> <th>Method</th> <th>Job ID(s)</th> </tr> </thead> <tbody> <tr> <td>23</td> <td>Ali Bowns</td> <td>£420.00</td> <td>Cash</td> <td>[2] [43] [32]</td> </tr> <tr> <td>17</td> <td>City University</td> <td>£120.00</td> <td>Card</td> <td>[8]</td> </tr> <tr> <td>Etc</td> <td>Etc</td> <td>Etc</td> <td>Etc</td> <td>Etc</td> </tr> </tbody> </table>	Job ID	Price (£)	Discount	Start date	Tasks	Status	Exceed Deadline	56	247.00	X%	24/02/18	[34] [11] [1]	Completed	N	43	88.00	X%	26/02/18	[4] [3]	Completed	N	Date <input type="date"/> 02/08/2018	Date <input type="date"/> 02/08/2018	Currency <input type="text"/> GBP	Type <input type="text"/> Mastercard	Signature <input type="text"/>	Expiry date <input type="date"/> 09/23	<input type="button" value="Add cash pay"/>	<input type="button" value="Add card pay"/>	ID	Name	Amount	Method	Job ID(s)	23	Ali Bowns	£420.00	Cash	[2] [43] [32]	17	City University	£120.00	Card	[8]	Etc	Etc	Etc	Etc	Etc
Task ID	Task Desc	Location	Shelf	Price (£)	Duration (min)	Discount																																																																																
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5	Colour transparency processing	Development area	DR100	110.30	180	X%																																																																																
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56	247.00	X%	24/02/18	[34] [11] [1]	Completed	N																																																																																
43	88.00	X%	26/02/18	[4] [3]	Completed	N																																																																																
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23	Ali Bowns	£420.00	Cash	[2] [43] [32]																																																																																		
17	City University	£120.00	Card	[8]																																																																																		
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<p>The screenshot shows the staffReportForm interface. At the top, there are three navigation buttons: Receptionist screen, Technician screen, and Shift Manager screen (with a blue notification badge). Below these are three report sections:</p> <ul style="list-style-type: none"> Performance report: Includes date range (From 24/07/2018 To 02/08/2018), shift selection (Day shift, Night shift), department selection (Copy room, Finishing, Packing, Development), and a "Generate performance report" button. Staff report: Includes date range (From 24/07/2018 To 02/08/2018), staff selection (Selected staff table with columns ID, Name, Role, and a "Select staff" button), and a "Generate staff effort report" button. Customer report: Includes date range (From 24/07/2018 To 02/08/2018), customer selection (Selected customer dropdown set to M.Lark, "View customers" button), and a "Generate customer report" button. 	staffReportForm
<p>The screenshot shows the performanceReportForm interface, which is identical to the staffReportForm shown above, including the same report sections and layout.</p>	performanceReportForm

<div style="border: 1px solid black; padding: 10px;"> <p style="text-align: right;">←</p> <p>shiftmanagerForm</p> <p style="text-align: center;">Shift Manager screen 1</p> <p>From 24/07/2018 2 To 02/08/2018 2</p> <p><input type="checkbox"/> Day shift <input type="checkbox"/> Night shift</p> <p style="text-align: right;">Generate performance report</p> <p>Select department</p> <p><input checked="" type="radio"/> Copy room <input checked="" type="radio"/> Finishing <input type="radio"/> Packing <input type="radio"/> Development</p> <p>Staff report</p> <p>From 24/07/2018 2 To 02/08/2018 2</p> <p>Selected staff</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>ID</th> <th>Name</th> <th>Role</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p style="text-align: right;">Generate staff effort report</p> <p>Select staff 3</p> <p>Customer report</p> <p>From 24/07/2018 4 To 02/08/2018 4</p> <p>Selected customer</p> <p>View customers M.Lark Generate customer report</p> </div>	ID	Name	Role							<p style="text-align: right;">→</p> <p>technicianForm</p> <p>Technician ←</p> <p>Select job</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>ID</th> <th>Customer</th> <th>Status</th> <th>Location</th> <th>Deadline</th> </tr> </thead> <tbody> <tr> <td>34</td> <td>M.Lark</td> <td>Use of small copy camera</td> <td>Copy room</td> <td>22/02/19 1</td> </tr> <tr> <td>27</td> <td>A. 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	menuBar
	selectStaffTable

<p>Add a payment</p> <p>Select customer View customer list 1034 J.Smith</p> <table border="1"> <thead> <tr> <th>Job ID</th> <th>Price (£)</th> <th>Discount</th> <th>Start date</th> <th>Tasks</th> <th>Status</th> <th>Exceed Deadline</th> </tr> </thead> <tbody> <tr> <td>56</td> <td>247.00</td> <td>X%</td> <td>24/02/18</td> <td>[34] [11] [1]</td> <td>Completed</td> <td>N</td> </tr> <tr> <td>43</td> <td>88.00</td> <td>X%</td> <td>26/02/18</td> <td>[4] [3]</td> <td>Completed</td> <td>N</td> </tr> </tbody> </table> <p>Discount: Fixed Price: £XXX.XX Price after discount: £XXX.XX</p> <p>Choose a payment type</p> <table border="1"> <tr> <td>Date: 02/08/2018 Calendar</td> <td>Date: 02/08/2018 Calendar</td> </tr> <tr> <td>Currency: GBP</td> <td>Type: Mastercard</td> </tr> <tr> <td>Signature:</td> <td>Expire date: 09/23 Calendar</td> </tr> <tr> <td></td> <td>Last 4 digits: <input type="text"/></td> </tr> <tr> <td>Add cash pay</td> <td>Add card pay</td> </tr> </table> <p>Payment history</p> <table border="1"> <thead> <tr> <th>ID</th> <th>Name</th> <th>Amount</th> <th>Method</th> <th>Job ID(s)</th> </tr> </thead> <tbody> <tr> <td>23</td> <td>Ali Bowns</td> <td>£420.00</td> <td>Cash</td> <td>[2] [43] [32]</td> </tr> <tr> <td>17</td> <td>City University</td> <td>£120.00</td> <td>Card</td> <td>[8]</td> </tr> <tr> <td>Etc</td> <td>Etc</td> <td>Etc</td> <td>Etc</td> <td>Etc</td> </tr> </tbody> </table>	Job ID	Price (£)	Discount	Start date	Tasks	Status	Exceed Deadline	56	247.00	X%	24/02/18	[34] [11] [1]	Completed	N	43	88.00	X%	26/02/18	[4] [3]	Completed	N	Date: 02/08/2018 Calendar	Date: 02/08/2018 Calendar	Currency: GBP	Type: Mastercard	Signature:	Expire date: 09/23 Calendar		Last 4 digits: <input type="text"/>	Add cash pay	Add card pay	ID	Name	Amount	Method	Job ID(s)	23	Ali Bowns	£420.00	Cash	[2] [43] [32]	17	City University	£120.00	Card	[8]	Etc	Etc	Etc	Etc	Etc	paymentHistoryTable
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<p>Receptionist</p> <p>New job</p> <p>Select customer View customer list 1034 J.Smith Discount: Fixed</p> <table border="1"> <tr> <td>Name: <input type="text"/></td> <td>Phone: <input type="text"/></td> <td>Address: <input type="text"/></td> </tr> <tr> <td>Surname: <input type="text"/></td> <td>Email: <input type="text"/></td> <td>Postcode/ZIP: <input type="text"/></td> </tr> </table> <p>Add customer</p> <p>Tasks</p> <table border="1"> <thead> <tr> <th>Task ID</th> <th>Task Desc</th> <th>Location</th> <th>Shelf</th> <th>Price (£)</th> <th>Duration (min)</th> <th>Discount</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>Black and white film processing</td> <td>Development area</td> <td>DR12</td> <td>49.50</td> <td>60</td> <td>X%</td> </tr> <tr> <td>5</td> <td>Colour transparency processing</td> <td>Development area</td> <td>DR100</td> <td>110.30</td> <td>180</td> <td>X%</td> </tr> </tbody> </table> <p>Add tasks to job</p> <p>Special instructions: <input type="text"/></p> <p><input type="checkbox"/> Urgent <input type="checkbox"/> Stipulated Deadline: <input type="text"/> Calendar</p> <p>Price: £XXX.XX</p> <p>Add new job</p> <p>Print label Payment Print receipt</p> <p>Current Jobs</p> <table border="1"> <thead> <tr> <th>ID</th> <th>Customer</th> <th>Status</th> <th>Location</th> <th>Deadline</th> </tr> </thead> <tbody> <tr> <td>34</td> <td>M.Lark</td> <td>Use of small copy camera</td> <td>Copy Room</td> <td>22/02/19</td> </tr> <tr> <td>Etc.</td> <td>Etc.</td> <td>Etc.</td> <td>Etc.</td> <td>Etc.</td> </tr> </tbody> </table>	Name: <input type="text"/>	Phone: <input type="text"/>	Address: <input type="text"/>	Surname: <input type="text"/>	Email: <input type="text"/>	Postcode/ZIP: <input type="text"/>	Task ID	Task Desc	Location	Shelf	Price (£)	Duration (min)	Discount	2	Black and white film processing	Development area	DR12	49.50	60	X%	5	Colour transparency processing	Development area	DR100	110.30	180	X%	ID	Customer	Status	Location	Deadline	34	M.Lark	Use of small copy camera	Copy Room	22/02/19	Etc.	Etc.	Etc.	Etc.	Etc.	View customers									
Name: <input type="text"/>	Phone: <input type="text"/>	Address: <input type="text"/>																																																		
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Etc.	Etc.	Etc.	Etc.	Etc.																																																

Receptionist

New job  Select customer  View customers 1034 J.Smith Discount: Fixed

Name <input type="text"/>	Phone <input type="text"/>	Address <input type="text"/>
Surname <input type="text"/>	Email <input type="text"/>	Postcode/ZIP <input type="text"/>

Add customer   

Tasks

Task ID	Task Desc	Location	Shelf	Price (€)	Duration (min)	Discount
2	Black and white film processing	Development area	DR12	49.50	60	X%
5	Colour transparency processing	Development area	DR100	110.30	180	X%

 Add tasks to job  

Special instructions

Urgent Stipulated Deadline 

Price: £XXX.XX  

 Add new job  Print label  Payment  Print receipt  

Notification bar

Current Jobs

ID	Customer	Status	Location	Deadline
34	M.Lark	Use of small copy camera	Copy Room	22/02/19
Etc.	Etc.	Etc	Etc.	Etc

Add customer

Receptionist

New job  Select customer  View customers 1034 J.Smith Discount: Fixed

Name <input type="text"/>	Phone <input type="text"/>	Address <input type="text"/>
Surname <input type="text"/>	Email <input type="text"/>	Postcode/ZIP <input type="text"/>

Add customer   

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Task ID	Task Desc	Location	Shelf	Price (€)	Duration (min)	Discount
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Etc.	Etc.	Etc	Etc.	Etc

Add tasks to job

Receptionist

New job

Select customer 1034 J.Smith Discount: Fixed

Name Phone Address

Surname Email Postcode/ZIP

Add customer

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34	M.Lark	Use of small copy camera	Copy Room	22/02/19
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Add new job

Receptionist

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Etc.	Etc.	Etc	Etc.	Etc

Print label

Receptionist
C
Payment

New job

Select customer [View customers](#) 1034 J.Smith Discount: Fixed

Name	Phone	Address
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[Add tasks to job](#)

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[Add new job](#) [Payment](#) [Print receipt](#)

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ID	Customer	Status	Location	Deadline
34	M.Lark	Use of small copy camera	Copy Room	22/02/19
Etc.	Etc.	Etc	Etc.	Etc

Receptionist
C
Print receipt

New job

Select customer [View customers](#) 1034 J.Smith Discount: Fixed

Name	Phone	Address
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Task ID	Task Desc	Location	Shelf	Price (€)	Duration (min)	Discount
2	Black and white film processing	Development area	DR12	49.50	60	X%
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[Add tasks to job](#)

Special instructions

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Price: €XXX.XX

[Add new job](#) [Payment](#) [Print receipt](#)

Current Jobs

ID	Customer	Status	Location	Deadline
34	M.Lark	Use of small copy camera	Copy Room	22/02/19
Etc.	Etc.	Etc	Etc.	Etc

BIPL Tasks					
Task ID	Task Desc	Location	Shelf	Price (£)	Duration (min)
1	Use of large copy camer	Copy room	CR25	19.00	120
2	Black and white film processing	Development	DR12	49.50	60
3	Bag up	Packing departments	PR10	6.00	30
4	Colour film processing	Development area	DR25	80.00	90
...	Etc...	Etc...	Etc...	Etc...	Etc...

Add new task to BIPL

Task Description [] Shelf [] Duration []

Location [] Price []

Add task to BIPL

Technician

Select job →

ID	Customer	Status	Location	Deadline
34	M. Lark	Use of small copy camera	Copy room	22/02/19
27	A. Peterson	Mount transparencies	Finishing room	03/03/19

< >

Selected job: 34

Current task Use of small copy camera

Next task Colour film processing

Performed by: Alan

Update task Notify deadline exceed

Enquiry box

From: Jay

Alan have you completed task 6 for job 34?
Let me know ASAP, customer is ready to collect!

Thanks.

To: Jay

Deadline is going to exceed for job 34. There is still 1 task left. I have notified both managers.

Thanks

Respond

Previous Enquiry > Next Enquiry

Technician

Select job →

ID	Customer	Status	Location	Deadline
34	M. Lark	Use of small copy camera	Copy room	22/02/19
27	A. Peterson	Mount transparencies	Finishing room	03/03/19

< >

Selected job: 34

Current task Use of small copy camera

Next task Colour film processing

Performed by: Alan

Update task Notify deadline exceed

Enquiry box

From: Jay

Alan have you completed task 6 for job 34?
Let me know ASAP, customer is ready to collect!

Thanks.

To: Jay

Deadline is going to exceed for job 34. There is still 1 task left. I have notified both managers.

Thanks

Respond

Previous Enquiry > Next Enquiry

→ Add task to BIPL

→ Update task

→ Notify deadline exceed

Technician

Select job

ID	Customer	Status	Location	Deadline
34	M.Lark	Use of small copy camera	Copy room	22/02/19
27	A. Peterson	Mount transparencies	Finishing room	03/03/19

Selected job: 34

Current task: Use of small copy camera

Performed by: Alan

Next task: Colour film processing

Update task

Notify deadline exceed

Enquiry box

From: Jay
Alan have you completed task 6 for job 34?
Let me know ASAP, customer is ready to collect!
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To: Jay
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Respond

Respond

Receptionist screen

Receptionist screen Technician screen Shift Manager screen

Performance report

From 24/07/2018 To 02/08/2018

Day shift Night shift

Generate performance report

Select department

Copy room Finishing Packing Development

Staff report

From 24/07/2018 To 02/08/2018

Selected staff

ID	Name	Role

Generate staff effort report

Select staff

Customer report

From 24/07/2018 To 02/08/2018

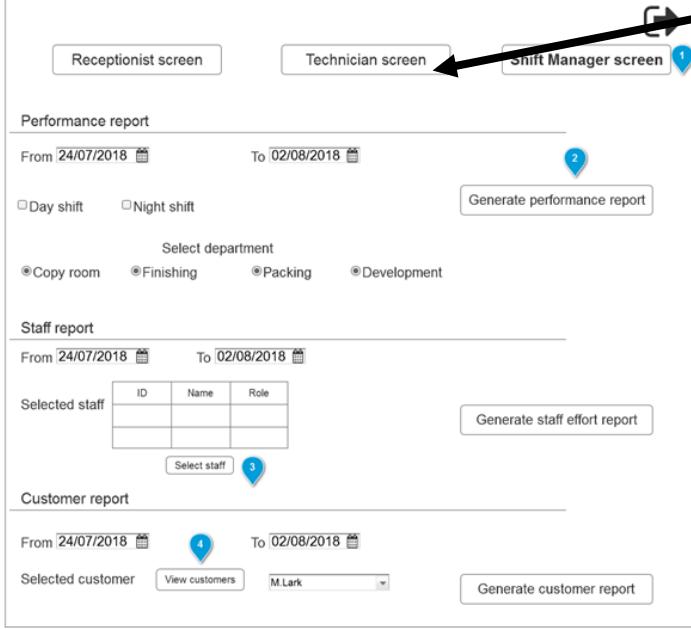
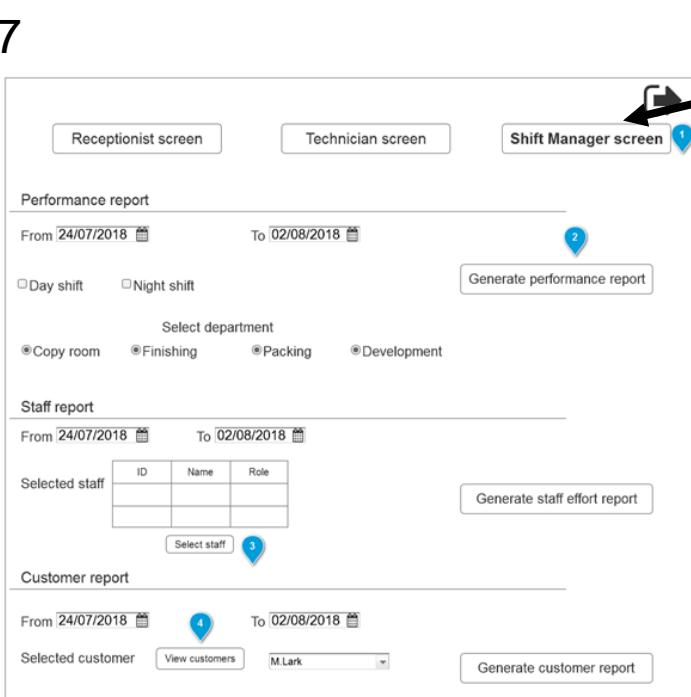
Selected customer

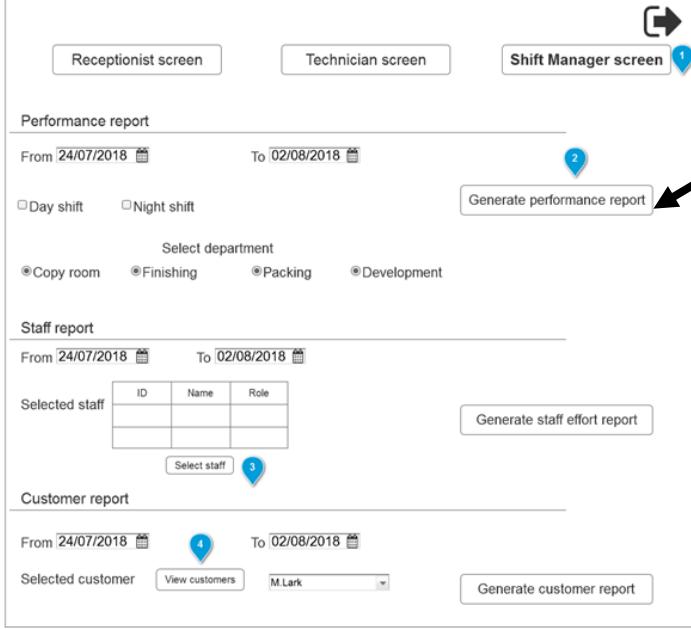
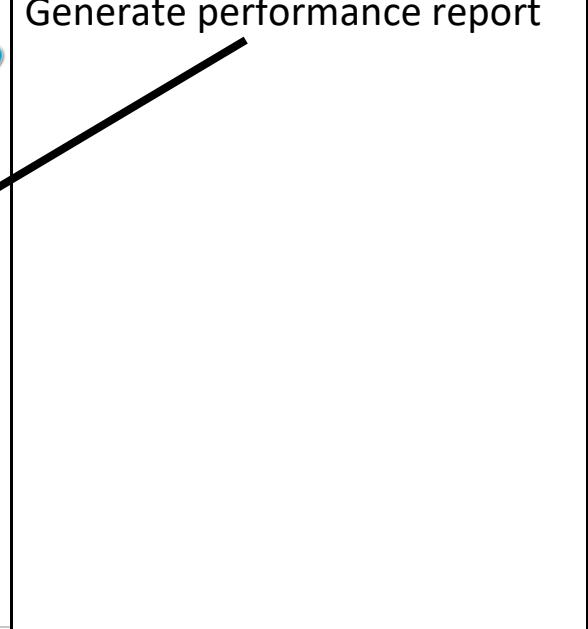
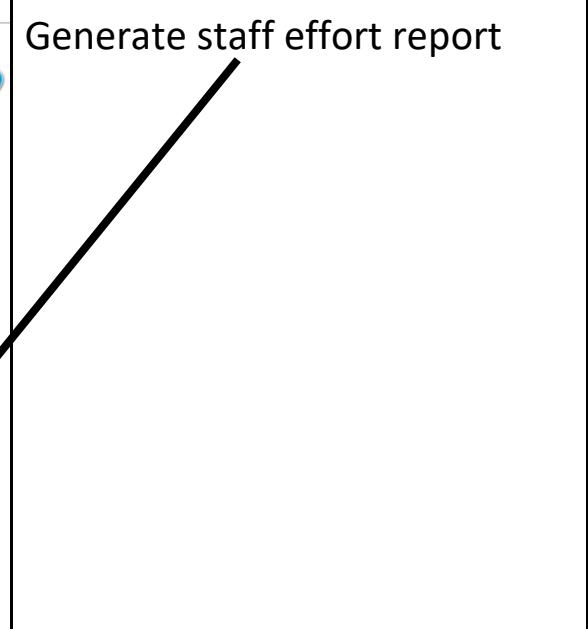
View customers

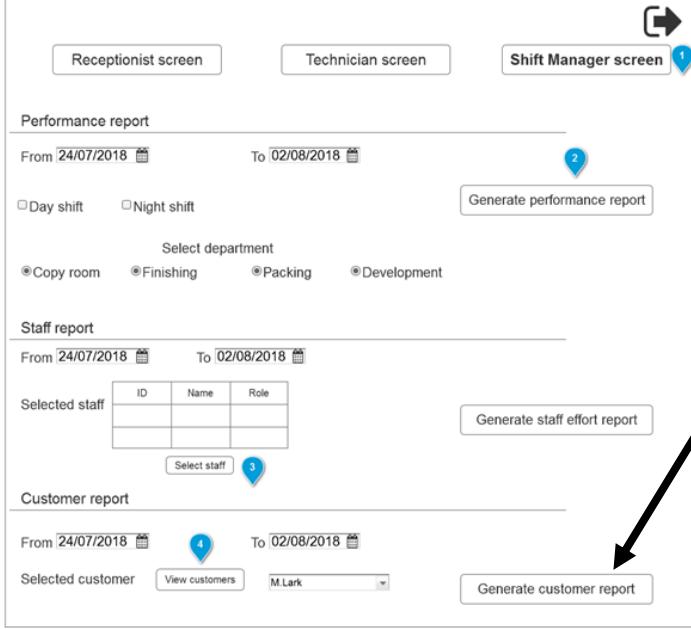
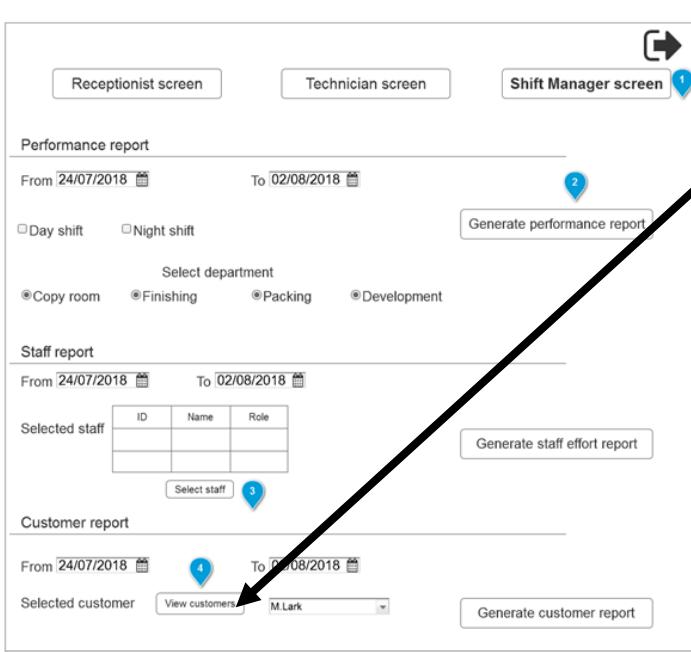
M.Lark

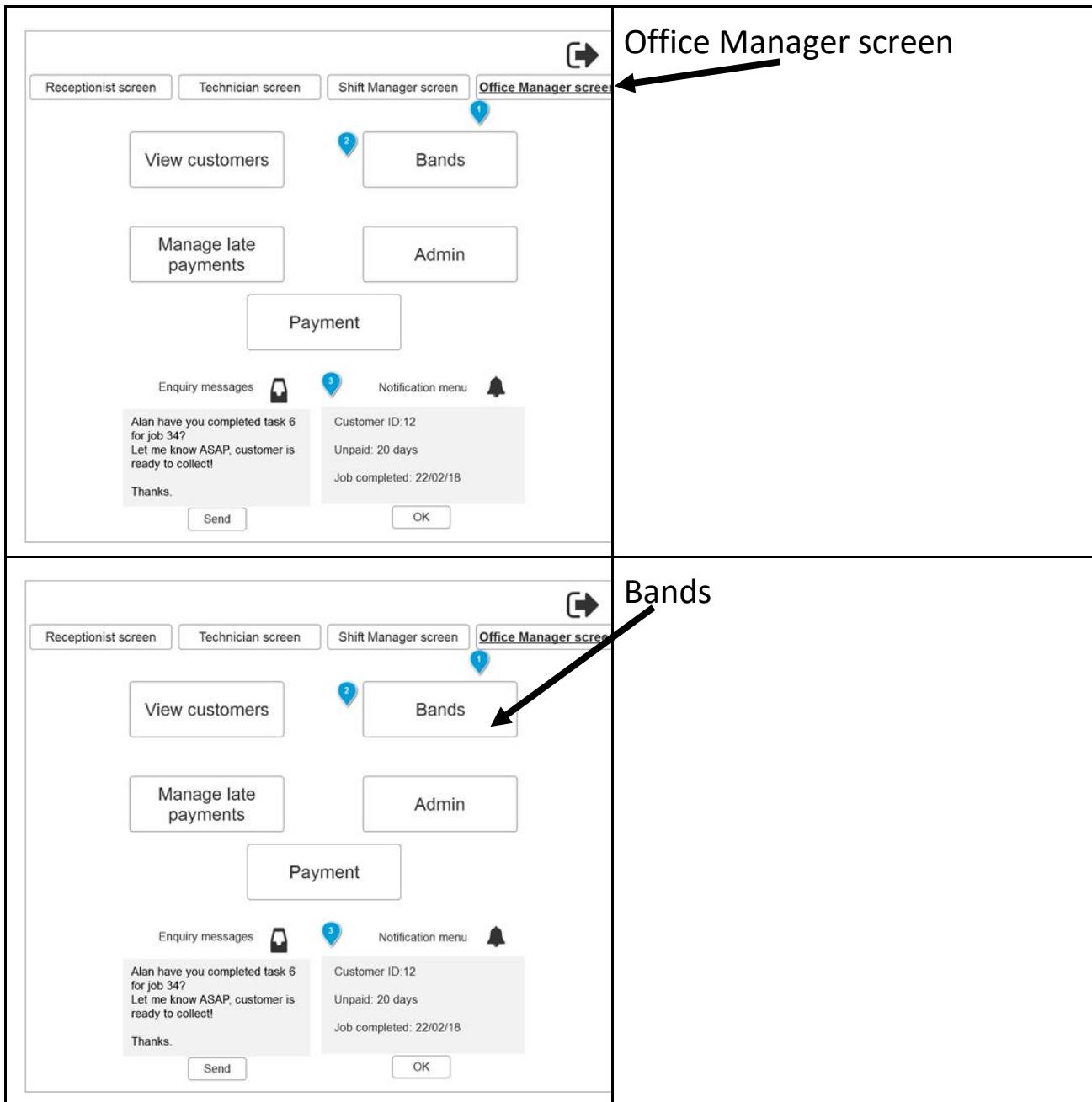
Generate customer report

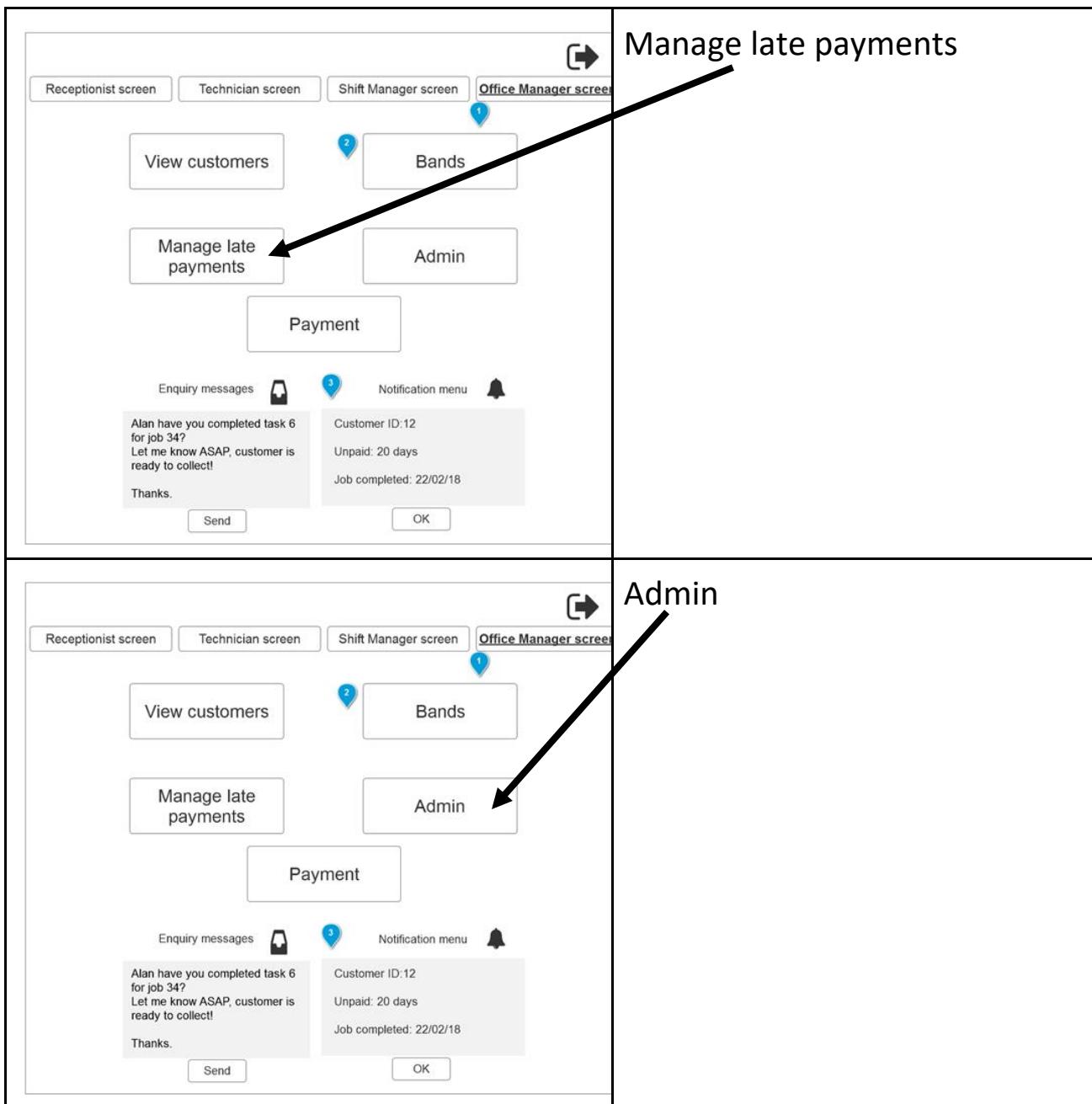
Receptionist screen

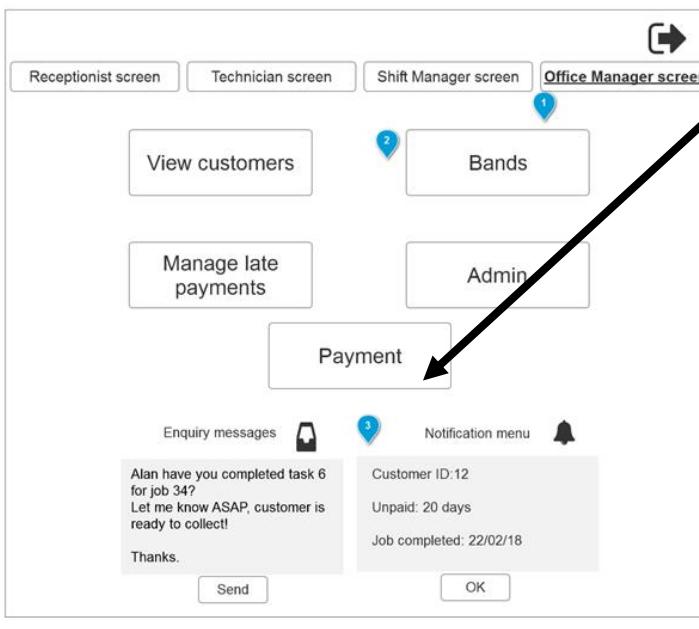
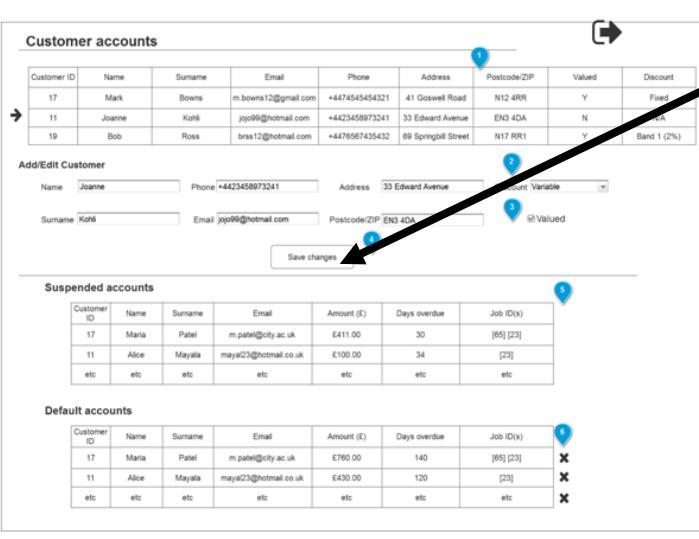
 <p>Technician screen</p>	 <p>Shift Manager screen</p>
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 <p>The Shift Manager screen displays three report generation sections:</p> <ul style="list-style-type: none"> Performance report: Filters by date (From 24/07/2018 To 02/08/2018), shift (Day shift or Night shift), and department (Copy room, Finishing, Packing, Development). Includes a "Generate performance report" button. Staff report: Filters by date (From 24/07/2018 To 02/08/2018) and staff selection (Selected staff table with columns ID, Name, Role, and "Select staff" button). Includes a "Generate staff effort report" button. Customer report: Filters by date (From 24/07/2018 To 02/08/2018) and customer selection (Selected customer dropdown menu showing "M.Lark"). Includes a "Generate customer report" button. 	<h3>Generate performance report</h3> 
 <p>The Shift Manager screen displays three report generation sections:</p> <ul style="list-style-type: none"> Performance report: Filters by date (From 24/07/2018 To 02/08/2018), shift (Day shift or Night shift), and department (Copy room, Finishing, Packing, Development). Includes a "Generate performance report" button. Staff report: Filters by date (From 24/07/2018 To 02/08/2018) and staff selection (Selected staff table with columns ID, Name, Role, and "Select staff" button). Includes a "Generate staff effort report" button. Customer report: Filters by date (From 24/07/2018 To 02/08/2018) and customer selection (Selected customer dropdown menu showing "M.Lark"). Includes a "Generate customer report" button. 	<h3>Generate staff effort report</h3> 

 <p>Shift Manager screen</p> <p>Performance report From 24/07/2018 To 02/08/2018 <input type="checkbox"/> Day shift <input type="checkbox"/> Night shift Generate performance report</p> <p>Select department <input checked="" type="radio"/> Copy room <input checked="" type="radio"/> Finishing <input type="radio"/> Packing <input type="radio"/> Development</p> <p>Staff report From 24/07/2018 To 02/08/2018 Selected staff <table border="1" style="width: 100%;"><thead><tr><th>ID</th><th>Name</th><th>Role</th></tr></thead><tbody><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></tbody></table> Generate staff effort report Select staff</p> <p>Customer report From 24/07/2018 To 02/08/2018 Selected customer View customers M.Lark Generate customer report</p>	ID	Name	Role							<p>Generate customer report</p>
ID	Name	Role								
 <p>Shift Manager screen</p> <p>Performance report From 24/07/2018 To 02/08/2018 <input type="checkbox"/> Day shift <input type="checkbox"/> Night shift Generate performance report</p> <p>Select department <input checked="" type="radio"/> Copy room <input checked="" type="radio"/> Finishing <input type="radio"/> Packing <input type="radio"/> Development</p> <p>Staff report From 24/07/2018 To 02/08/2018 Selected staff <table border="1" style="width: 100%;"><thead><tr><th>ID</th><th>Name</th><th>Role</th></tr></thead><tbody><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></tbody></table> Generate staff effort report Select staff</p> <p>Customer report From 24/07/2018 To 02/08/2018 Selected customer View customers M.Lark Generate customer report</p>	ID	Name	Role							<p>View customers</p>
ID	Name	Role								





 <p>Receptionist screen Technician screen Shift Manager screen Office Manager screen</p> <p>View customers Bands</p> <p>Manage late payments Admin</p> <p>Payment</p> <p>Enquiry messages Notification menu</p> <p>Alan have you completed task 6 for job 34? Let me know ASAP, customer is ready to collect! Thanks.</p> <p>Customer ID:12 Unpaid: 20 days Job completed: 22/02/18</p> <p>Send OK</p>	<h2>Payment</h2>																																																																																												
 <p>Customer accounts</p> <table border="1"> <thead> <tr> <th>Customer ID</th> <th>Name</th> <th>Surname</th> <th>Email</th> <th>Phone</th> <th>Address</th> <th>Postcode/ZIP</th> <th>Valued</th> <th>Discount</th> </tr> </thead> <tbody> <tr> <td>17</td> <td>Mark</td> <td>Bowns</td> <td>m.bowns12@gmail.com</td> <td>+4474545454321</td> <td>41 Goswell Road</td> <td>N12 4RR</td> <td>Y</td> <td>Fixed</td> </tr> <tr> <td>11</td> <td>Joanne</td> <td>Kohli</td> <td>jopo99@hotmail.com</td> <td>+4423458973241</td> <td>33 Edward Avenue</td> <td>EN1 4DA</td> <td>N</td> <td>Var</td> </tr> <tr> <td>19</td> <td>Bob</td> <td>Ross</td> <td>brss12@hotmail.com</td> <td>+4478567435432</td> <td>89 Springhill Street</td> <td>N17 RR1</td> <td>Y</td> <td>Band 1 (2%)</td> </tr> </tbody> </table> <p>Add/Edit Customer</p> <p>Name: Joanne Phone: +4423458973241 Address: 33 Edward Avenue Account Variable</p> <p>Surname: Kohli Email: jopo99@hotmail.com Postcode/ZIP: EN1 4DA Valued</p> <p>Save changes</p> <p>Suspended accounts</p> <table border="1"> <thead> <tr> <th>Customer ID</th> <th>Name</th> <th>Surname</th> <th>Email</th> <th>Amount (£)</th> <th>Days overdue</th> <th>Job ID(s)</th> </tr> </thead> <tbody> <tr> <td>17</td> <td>Maria</td> <td>Patel</td> <td>m.patel@city.ac.uk</td> <td>£411.00</td> <td>30</td> <td>[65] [23]</td> </tr> <tr> <td>11</td> <td>Alice</td> <td>Mayala</td> <td>maya023@hotmail.co.uk</td> <td>£100.00</td> <td>34</td> <td>[23]</td> </tr> <tr> <td>etc</td> <td>etc</td> <td>etc</td> <td>etc</td> <td>etc</td> <td>etc</td> <td>etc</td> </tr> </tbody> </table> <p>Default accounts</p> <table border="1"> <thead> <tr> <th>Customer ID</th> <th>Name</th> <th>Surname</th> <th>Email</th> <th>Amount (£)</th> <th>Days overdue</th> <th>Job ID(s)</th> </tr> </thead> <tbody> <tr> <td>17</td> <td>Maria</td> <td>Patel</td> <td>m.patel@city.ac.uk</td> <td>£760.00</td> <td>140</td> <td>[65] [23]</td> </tr> <tr> <td>11</td> <td>Alice</td> <td>Mayala</td> <td>maya023@hotmail.co.uk</td> <td>£430.00</td> <td>120</td> <td>[23]</td> </tr> <tr> <td>etc</td> <td>etc</td> <td>etc</td> <td>etc</td> <td>etc</td> <td>etc</td> <td>etc</td> </tr> </tbody> </table>	Customer ID	Name	Surname	Email	Phone	Address	Postcode/ZIP	Valued	Discount	17	Mark	Bowns	m.bowns12@gmail.com	+4474545454321	41 Goswell Road	N12 4RR	Y	Fixed	11	Joanne	Kohli	jopo99@hotmail.com	+4423458973241	33 Edward Avenue	EN1 4DA	N	Var	19	Bob	Ross	brss12@hotmail.com	+4478567435432	89 Springhill Street	N17 RR1	Y	Band 1 (2%)	Customer ID	Name	Surname	Email	Amount (£)	Days overdue	Job ID(s)	17	Maria	Patel	m.patel@city.ac.uk	£411.00	30	[65] [23]	11	Alice	Mayala	maya023@hotmail.co.uk	£100.00	34	[23]	etc	Customer ID	Name	Surname	Email	Amount (£)	Days overdue	Job ID(s)	17	Maria	Patel	m.patel@city.ac.uk	£760.00	140	[65] [23]	11	Alice	Mayala	maya023@hotmail.co.uk	£430.00	120	[23]	etc	<h2>Save changes</h2>												
Customer ID	Name	Surname	Email	Phone	Address	Postcode/ZIP	Valued	Discount																																																																																					
17	Mark	Bowns	m.bowns12@gmail.com	+4474545454321	41 Goswell Road	N12 4RR	Y	Fixed																																																																																					
11	Joanne	Kohli	jopo99@hotmail.com	+4423458973241	33 Edward Avenue	EN1 4DA	N	Var																																																																																					
19	Bob	Ross	brss12@hotmail.com	+4478567435432	89 Springhill Street	N17 RR1	Y	Band 1 (2%)																																																																																					
Customer ID	Name	Surname	Email	Amount (£)	Days overdue	Job ID(s)																																																																																							
17	Maria	Patel	m.patel@city.ac.uk	£411.00	30	[65] [23]																																																																																							
11	Alice	Mayala	maya023@hotmail.co.uk	£100.00	34	[23]																																																																																							
etc	etc	etc	etc	etc	etc	etc																																																																																							
Customer ID	Name	Surname	Email	Amount (£)	Days overdue	Job ID(s)																																																																																							
17	Maria	Patel	m.patel@city.ac.uk	£760.00	140	[65] [23]																																																																																							
11	Alice	Mayala	maya023@hotmail.co.uk	£430.00	120	[23]																																																																																							
etc	etc	etc	etc	etc	etc	etc																																																																																							

<p>Add a payment</p> <p>Select customer View customer list 1</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th>Job ID</th> <th>Price (£)</th> <th>Discount</th> <th>Start date</th> <th>Tasks</th> <th>Status</th> <th>Exceed Deadline</th> </tr> </thead> <tbody> <tr> <td>56</td> <td>247.00</td> <td>X%</td> <td>24/02/18</td> <td>[34] [11] [1]</td> <td>Completed</td> <td>N</td> </tr> <tr> <td>43</td> <td>88.00</td> <td>X%</td> <td>26/02/18</td> <td>[4] [3]</td> <td>Completed</td> <td>N</td> </tr> </tbody> </table> <p style="text-align: center;">Discount: Fixed Price: £XXX.XX Price after discount: £XXX.XX</p> <p>Choose a payment type</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> Date <input type="text" value="02/08/2018"/> 3 Currency <input type="text" value="GBP"/> Signature <input type="text"/> </td> <td style="width: 50%;"> Date <input type="text" value="02/08/2018"/> 2 Type <input type="text" value="Mastercard"/> Expiry date <input type="text" value="09/23"/> Last 4 digits <input type="text"/> <input type="button" value="Add cash pay"/> 3 <input type="button" value="Add card pay"/> </td> </tr> </table> <p>Payment history 4</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th>ID</th> <th>Name</th> <th>Amount</th> <th>Method</th> <th>Job ID(s)</th> </tr> </thead> <tbody> <tr> <td>23</td> <td>Ali Bowns</td> <td>£420.00</td> <td>Cash</td> <td>[2] [43] [32]</td> </tr> <tr> <td>17</td> <td>City University</td> <td>£120.00</td> <td>Card</td> <td>[8]</td> </tr> <tr> <td>Etc</td> <td>Etc</td> <td>Etc</td> <td>Etc</td> <td>Etc</td> </tr> </tbody> </table>	Job ID	Price (£)	Discount	Start date	Tasks	Status	Exceed Deadline	56	247.00	X%	24/02/18	[34] [11] [1]	Completed	N	43	88.00	X%	26/02/18	[4] [3]	Completed	N	Date <input type="text" value="02/08/2018"/> 3 Currency <input type="text" value="GBP"/> Signature <input type="text"/>	Date <input type="text" value="02/08/2018"/> 2 Type <input type="text" value="Mastercard"/> Expiry date <input type="text" value="09/23"/> Last 4 digits <input type="text"/> <input type="button" value="Add cash pay"/> 3 <input type="button" value="Add card pay"/>	ID	Name	Amount	Method	Job ID(s)	23	Ali Bowns	£420.00	Cash	[2] [43] [32]	17	City University	£120.00	Card	[8]	Etc	Etc	Etc	Etc	Etc	<p>View customer list</p> 	
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Etc	Etc	Etc	Etc	Etc																																									

Add a payment

Select customer [View customer list](#) 1034 J.Smith

Job ID	Price (£)	Discount	Start date	Tasks	Status	Exceed Deadline
56	247.00	X%	24/02/18	[34] [11] [1]	Completed	N
43	86.00	X%	26/02/18	[4] [3]	Completed	N

Discount: Fixed Price: £XXX.XX
Price after discount: £XXX.XX

Choose a payment type

Date: 02/08/2018	Date: 02/08/2018
Currency: GBP	Type: Mastercard
Signature:	Expiry date: 09/23
	Last 4 digits:
Add cash pay	Add card pay

Payment history

ID	Name	Amount	Method	Job ID(s)
23	Ali Bowns	£420.00	Cash	[2] [43] [32]
17	City University	£120.00	Card	[8]
Etc	Etc	Etc	Etc	Etc

Add card pay

Current late payments

Customer ID	Job ID(s)	Price (£)	Payment due date	Overdue	First reminder	Second reminder
17	[2] [33] [11]	585.00	20/02/18	25 days	✓	✗
44	[34]	85.00	22/02/18	22 days	✗	✗

Selected customer: 44

Customer details:
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean euismod bibendum laoreet. Proin gravida dolor sit amet lacus accumsan et viverra justo commodo. Proin sodales pulvinar tempor. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Nam fermentum, nulla luctus pharetra vulputate, felis tellus mollis orci, sed rhoncus sapien nunc eget.

[Print first reminder](#) 2 [Print second reminder](#)

Print first reminder

First reminder letter Second reminder letter

Letter content: Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean euismod bibendum laoreet. Proin gravida dolor sit amet lacus accumsan et viverra justo commodo. Proin sodales pulvinar tempor. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Nam fermentum, nulla luctus pharetra vulputate, felis tellus mollis orci, sed rhoncus sapien nunc eget.

[Save changes](#) 3 [Save changes](#)

Print second reminder

Current late payments

Customer ID	Job ID(s)	Price (£)	Payment due date	Overdue	First reminder	Second reminder
17	[2] [33] [11]	585.00	20/02/18	25 days	✓	✗
44	[34]	85.00	22/02/18	22 days	✗	✗

Selected customer: 44

1 Print first reminder

2 Print second reminder

3 Save changes

First reminder letter Second reminder letter

Save changes

Back up now

BIPL Admin

Staff ID	Name	Surname	Role/Privileges	Status	Date created
11	James	Patrick	Technician	Online	05/09/2016
1	Alice	Peterson	Receptionist	Online	22/10/2016
9	Ali	Baba	Shift Manager	Offline	21/09/2016
etc	etc	etc	etc	etc	etc

Add/Edit Staff

Name: Role/Privileges: Date created:

Surname: Status: Save changes

Last back up: 20/02/18 Back up due: 01/03/18

4 Restore selected version

Back up now

Date	Version	Performed by
01/02/18	4.1.3	Jay
01/01/18	4.1.0	Jay
etc	etc	etc

BIPL Admin

Staff ID	Name	Surname	Role/Privileges	Status	Date created
11	James	Patrick	Technician	Online	05/09/2016
1	Alice	Peterson	Receptionist	Online	22/10/2016
9	Ali	Baba	Shift Manager	Offline	21/07/16
etc	etc	etc	etc	etc	etc

Add/Edit Staff

Name	Role/Privileges	Date created
Surname	Status	<input type="button" value="Save changes"/>

Last back up: 20/02/18 Back up due: 01/04/18

<input type="button" value="Back up now"/>	<input type="button" value="3"/>
<input type="button" value="Restore selected version"/>	<input type="button" value="1"/>

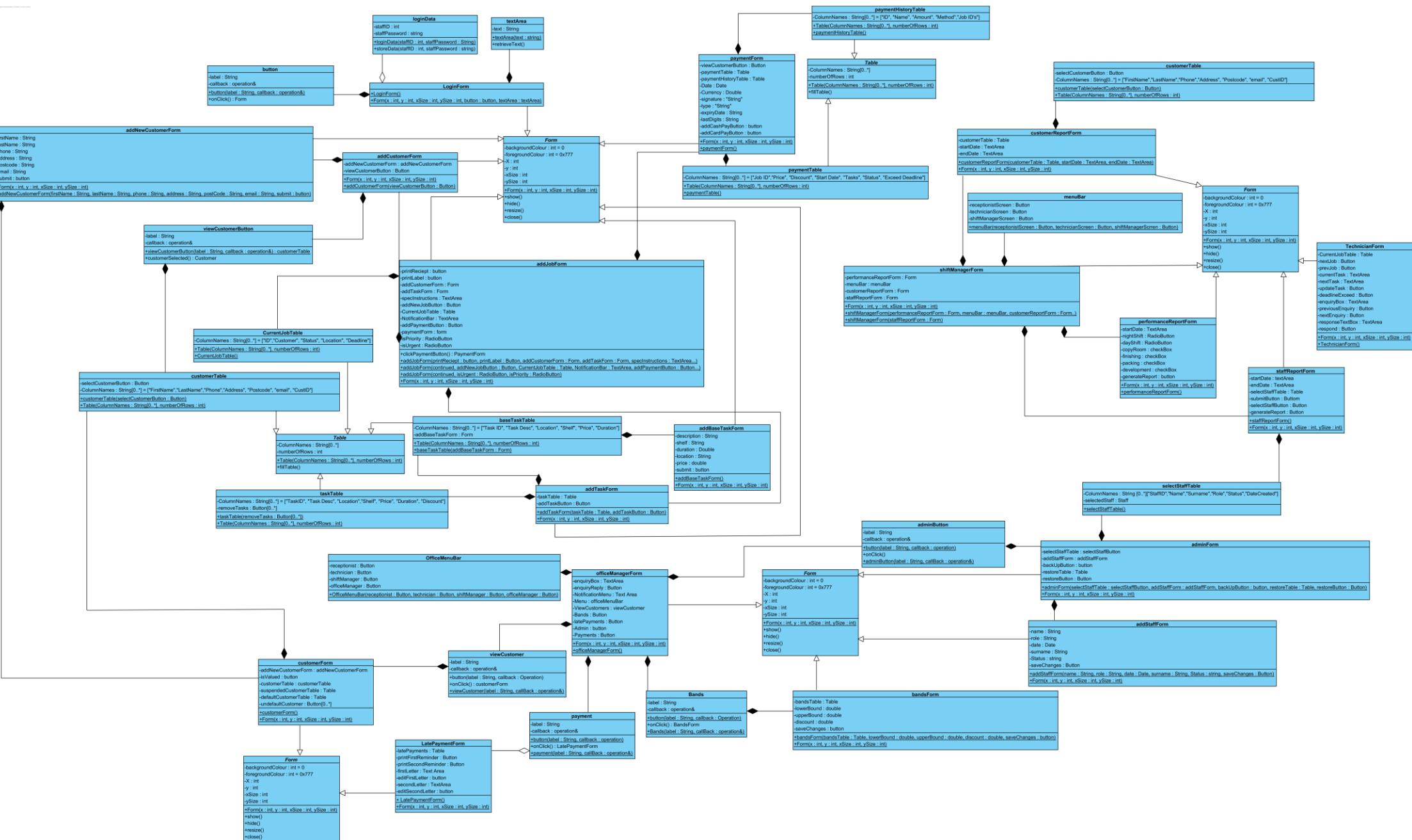
Restore selected versions

10.5 GUI Diagram

A Graphical User Interface Diagram has also been included within this documentation to:

Display the structure of the system, this has been shown by the system's classes, attributes, operations and the various types of relationships amongst the objects.

Graphical User Interface Diagram has been shown below:



10.6 Database DML/DDL Statements

We have decided to use a MYSQL database 5.7 managed by MySqlWorkbench 6.3.10
Windows 10 (64-bit operating System)

DML Statements

INSERT

Insert a new customer into the system

```
INSERT INTO Customer(name, surname, phoneNo,email, address, postcode)
VALUES ("Bob","Ross","01234 56789","bob.ross@gmail.com","123 Baker Street, London", "AB12
3CD");
```

Change an existing customer to a valued customer

```
INSERT INTO ValuedCustomer(CustomercustomerID) SELECT customer.customerID FROM customer
WHERE name ="Bob" AND surname = "Ross" AND phoneNo = "01234 56789" AND email =
"bob.ross@gmail.com" AND address = "123 Baker Street, London" AND postcode = "AB12 3CD";
```

SELECT

Select all the tasks for a Job

```
SELECT Task.*, baseTask.* FROM task, baseTask WHERE Task.JobJobID = "2" AND
baseTask.baseTaskID = Task.baseTaskbaseTaskID;
```

Alternate:

```
SELECT task.*, baseTask.* FROM task INNER JOIN baseTask ON task.baseTaskbaseTaskID =
baseTask.baseTaskID WHERE task.JobJobID =2
```

Select all valued customers

```
SELECT Customer.* FROM Customer,valueCustomer WHERE valueCustomer.CustomercustomerID
= Customer.CustomerID
```

Alternate:

```
SELECT Customer.* FROM Customer INNER JOIN valueCustomer ON Customer.customerID =
valueCustomer.customercustomerID
```

Update

Update a task when a technician starts to work on it

```
UPDATE Task SET StaffStaffID = 1, startDate = "2001-01-01" WHERE Task.taskID = 2;
```

Add a discount to a valued customer

```
UPDATE valueCustomer,Discount Set valueCustomer.DiscountdiscountID
=1 WHERE valueCustomer.customercustomerID = 8;
```

DELETE

Delete a task from a Job

```
DELETE FROM Task WHERE Task.taskid = 2;
```

Remove the default status on a customer

```
DELETE FROM defaultCustomer WHERE suspendedCustomerValueCustomerCustomercustomerID =
3
```

PERFORMANCE REPORT

```
SELECT Date(task.endDate) as "Date",
sum(IF( baseTask.department = "Copy Room",TIMESTAMPDIFF(hour,task.startDate,task.endDate),
0))AS "Copy Room",
sum(IF( baseTask.department = "Development",TIMESTAMPDIFF(hour,task.startDate,task.endDate),
0))AS "Development",
sum(IF( baseTask.department = "Finishing",TIMESTAMPDIFF(hour,task.startDate,task.endDate),
0))AS "Finishing",
sum(IF( baseTask.department = "Packaging",TIMESTAMPDIFF(hour,task.startDate,task.endDate),
0))AS "Packaging"

FROM Task INNER JOIN baseTask ON baseTask.baseTaskID = task.baseTaskbaseTaskID
WHERE time(task.endDate) >= "05:00" AND time(task.endDate) <="14:30"

group by Date With ROLLUP;
```

```
SELECT Date(task.endDate) as "Date",
sum(IF( baseTask.department = "Copy Room",TIMESTAMPDIFF(hour,task.startDate,task.endDate),
0))AS "Copy Room",
sum(IF( baseTask.department = "Development",TIMESTAMPDIFF(hour,task.startDate,task.endDate),
0))AS "Development",
sum(IF( baseTask.department = "Finishing",TIMESTAMPDIFF(hour,task.startDate,task.endDate),
0))AS "Finishing",
sum(IF( baseTask.department = "Packaging",TIMESTAMPDIFF(hour,task.startDate,task.endDate),
0))AS "Packaging"
```

```
FROM Task INNER JOIN baseTask ON baseTask.baseTaskID = task.baseTaskbaseTaskID
WHERE time(task.endDate) >= "14:31" AND time(task.endDate)<="22:00"
```

group by Date With ROLLUP;

```
SELECT Date(task.endDate) as "Date",
sum(IF( baseTask.department = "Copy Room",TIMESTAMPDIFF(hour,task.startDate,task.endDate),
0))AS "Copy Room",
sum(IF( baseTask.department = "Development",TIMESTAMPDIFF(hour,task.startDate,task.endDate),
0))AS "Development",
sum(IF( baseTask.department = "Finishing",TIMESTAMPDIFF(hour,task.startDate,task.endDate),
0))AS "Finishing",
sum(IF( baseTask.department = "Packaging",TIMESTAMPDIFF(hour,task.startDate,task.endDate),
0))AS "Packaging"
```

```
FROM Task INNER JOIN baseTask ON baseTask.baseTaskID = task.baseTaskbaseTaskID
WHERE (time(task.endDate) >= time("22:01") AND time(task.endDate)<=time("23:59")) OR
(time(task.endDate) <= time("04:59") AND time(task.endDate) >= time("00:00"))
```

group by Date With ROLLUP;

Staff Report

```
SELECT Staff.firstName,Staff.surname,baseTask.baseTaskID AS "Code",baseTask.department,task.taskID,task.startDate,TIMESTAMPDIFF(hour,task.startDate,task.endDate) AS "Time Taken",
Staff.StaffID,
(SELECT sum(TIMESTAMPDIFF(hour,task.startDate,task.endDate)) FROM Task WHERE Task.StaffStaffID = Staff.StaffID) AS "Total Time per Worker"

FROM Task
INNER JOIN staff ON Task.staffStaffID= staff.staffID
INNER JOIN baseTask ON Task.baseTaskbaseTaskID = baseTask.baseTaskID
UNION ALL
SELECT "Total
Time",null,null,null,null,null,null,SUM(TIMESTAMPDIFF(hour,task.startDate,task.endDate))
FROM Task;
```

CUST REPORT

```
SELECT job.* FROM job INNER JOIN Customer ON Customer.CustomerID = Job.CustomerCustomerID  
WHERE Job.CustomerCustomerID = 2 AND Job.OrderDate >'1990-01-01' AND Job.OrderDate <'2015-  
01-01' GROUP BY Job.OrderDate
```

DDL Statements

```
SET @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS, UNIQUE_CHECKS=0;
SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS, FOREIGN_KEY_CHECKS=0;
SET @OLD_SQL_MODE=@@SQL_MODE, SQL_MODE='TRADITIONAL,ALLOW_INVALID_DATES';

-----
-- Schema mydb
-----

-----
-- Schema sys
-----


-----
-- Schema sys
-----


CREATE SCHEMA IF NOT EXISTS `sys` DEFAULT CHARACTER SET utf8 ;
USE `sys` ;


-----
-- Table `sys`.`band`
-----


CREATE TABLE IF NOT EXISTS `sys`.`band` (
  `BandID` INT(10) NOT NULL AUTO_INCREMENT,
  `lowerBound` DOUBLE NOT NULL,
  `upperBound` DOUBLE NOT NULL,
  `discount` DOUBLE NOT NULL,
  PRIMARY KEY (`BandID`)
)
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;

-----


-----
-- Table `sys`.`basetask`
-----


CREATE TABLE IF NOT EXISTS `sys`.`basetask` (
  `taskName` VARCHAR(255) NOT NULL,
  `department` VARCHAR(255) NOT NULL,
  `description` VARCHAR(255) NOT NULL,
  `price` DOUBLE NOT NULL,
  `baseTaskID` INT(10) NOT NULL AUTO_INCREMENT,
  PRIMARY KEY (`baseTaskID`)
)
ENGINE = InnoDB
AUTO_INCREMENT = 9
DEFAULT CHARACTER SET = utf8;
```

```

-----  

-- Table `sys`.`customer`  

-----  

CREATE TABLE IF NOT EXISTS `sys`.`customer` (  

    `customerID` INT(10) NOT NULL AUTO_INCREMENT,  

    `name` VARCHAR(255) NOT NULL,  

    `surname` VARCHAR(255) NOT NULL,  

    `phoneNo` VARCHAR(255) NOT NULL,  

    `email` VARCHAR(255) NOT NULL,  

    `address` VARCHAR(255) NOT NULL,  

    `postcode` VARCHAR(255) NOT NULL,  

    PRIMARY KEY (`customerID`))  

ENGINE = InnoDB  

AUTO_INCREMENT = 9  

DEFAULT CHARACTER SET = utf8;

```

```

-----  

-- Table `sys`.`job`  

-----  

CREATE TABLE IF NOT EXISTS `sys`.`job` (  

    `JobID` INT(10) NOT NULL AUTO_INCREMENT,  

    `CustomercustomerID` INT(10) NOT NULL,  

    `orderDate` DATE NOT NULL,  

    `collectionDate` DATE NULL DEFAULT NULL,  

    `specInstructions` VARCHAR(255) NOT NULL,  

    `deadline` DATE NOT NULL,  

    `surcharge` DOUBLE NOT NULL,  

    `value` DOUBLE NOT NULL,  

    PRIMARY KEY (`JobID`),  

    INDEX `FKJob102033` (`CustomercustomerID` ASC),  

    CONSTRAINT `FKJob102033`  

        FOREIGN KEY (`CustomercustomerID`)  

        REFERENCES `sys`.`customer` (`customerID`))  

ENGINE = InnoDB  

AUTO_INCREMENT = 12  

DEFAULT CHARACTER SET = utf8;

```

```

-----  

-- Table `sys`.`payment`  

-----  

CREATE TABLE IF NOT EXISTS `sys`.`payment` (  

    `JobJobID` INT(10) NOT NULL,  

    `paymentDate` INT(10) NOT NULL,  

    PRIMARY KEY (`JobJobID`),  

    INDEX `FKPayment170102` (`JobJobID` ASC),  

    CONSTRAINT `FKPayment170102`  

        FOREIGN KEY (`JobJobID`)  

        REFERENCES `sys`.`job` (`JobID`))  

ENGINE = InnoDB

```

```
DEFAULT CHARACTER SET = utf8;
```

```
-- Table `sys`.`cardpayment`
```

```
CREATE TABLE IF NOT EXISTS `sys`.`cardpayment` (
  `PaymentJobJobID` INT(10) NOT NULL,
  `cardNo` INT(10) NOT NULL,
  `expDate` DATE NOT NULL,
  `type` INT(10) NOT NULL,
  PRIMARY KEY (`PaymentJobJobID`),
  INDEX `FKcardPaymen338903`(`PaymentJobJobID` ASC),
  CONSTRAINT `FKcardPaymen338903`
    FOREIGN KEY (`PaymentJobJobID`)
      REFERENCES `sys`.`payment` (`JobJobID`))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;
```

```
-- Table `sys`.`discount`
```

```
CREATE TABLE IF NOT EXISTS `sys`.`discount` (
  `discountID` INT(10) NOT NULL AUTO_INCREMENT,
  `discountType` VARCHAR(255) NOT NULL,
  PRIMARY KEY (`discountID`))
ENGINE = InnoDB
AUTO_INCREMENT = 12
DEFAULT CHARACTER SET = utf8;
```

```
-- Table `sys`.`valuedcustomer`
```

```
CREATE TABLE IF NOT EXISTS `sys`.`valuedcustomer` (
  `CustomercustomerID` INT(10) NOT NULL,
  `DiscountdiscountID` INT(10) NULL DEFAULT NULL,
  PRIMARY KEY (`CustomercustomerID`),
  INDEX `FKValuedCust496434`(`DiscountdiscountID` ASC),
  INDEX `FKValuedCust741192`(`CustomercustomerID` ASC),
  CONSTRAINT `FKValuedCust496434`
    FOREIGN KEY (`DiscountdiscountID`)
      REFERENCES `sys`.`discount` (`discountID`),
  CONSTRAINT `FKValuedCust741192`
    FOREIGN KEY (`CustomercustomerID`)
      REFERENCES `sys`.`customer` (`customerID`))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;
```

```

-----  

-- Table `sys`.`suspendedcustomer`  

-----  

CREATE TABLE IF NOT EXISTS `sys`.`suspendedcustomer` (  

`ValuedCustomerCustomerID` INT(10) NOT NULL,  

PRIMARY KEY (`ValuedCustomerCustomerID`),  

INDEX `FKsuspendedC671399` (`ValuedCustomerCustomerID` ASC),  

CONSTRAINT `FKsuspendedC671399`  

FOREIGN KEY (`ValuedCustomerCustomerID`)  

REFERENCES `sys`.`valuedcustomer` (`CustomerID`))  

ENGINE = InnoDB  

DEFAULT CHARACTER SET = utf8;  

-----  

-- Table `sys`.`defaultcustomer`  

-----  

CREATE TABLE IF NOT EXISTS `sys`.`defaultcustomer` (  

`suspendedCustomerValuedCustomerCustomerID` INT(10) NOT NULL,  

PRIMARY KEY (`suspendedCustomerValuedCustomerCustomerID`),  

INDEX `FKdefaultCus575149` (`suspendedCustomerValuedCustomerCustomerID` ASC),  

CONSTRAINT `FKdefaultCus575149`  

FOREIGN KEY (`suspendedCustomerValuedCustomerCustomerID`)  

REFERENCES `sys`.`suspendedcustomer` (`ValuedCustomerCustomerID`))  

ENGINE = InnoDB  

DEFAULT CHARACTER SET = utf8;  

-----  

-- Table `sys`.`staff`  

-----  

CREATE TABLE IF NOT EXISTS `sys`.`staff` (  

`staffID` INT(10) NOT NULL AUTO_INCREMENT,  

`firstName` VARCHAR(255) NOT NULL,  

`surName` VARCHAR(255) NOT NULL,  

`employeeType` VARCHAR(255) NOT NULL,  

PRIMARY KEY (`staffID`))  

ENGINE = InnoDB  

AUTO_INCREMENT = 8  

DEFAULT CHARACTER SET = utf8;

```

```

-----  

-- Table `sys`.`task`  

-----  

CREATE TABLE IF NOT EXISTS `sys`.`task` (
  `taskID` INT(10) NOT NULL AUTO_INCREMENT,
  `shelf` VARCHAR(10) NULL DEFAULT NULL,
  `startDate` DATETIME NULL DEFAULT NULL,
  `endDate` DATETIME NULL DEFAULT NULL,
  `StaffstaffID` INT(10) NULL DEFAULT NULL,
  `JobJobID` INT(10) NOT NULL,
  `baseTaskbaseTaskID` INT(10) NOT NULL,
  PRIMARY KEY (`taskID`),
  INDEX `FKTask954031` (`StaffstaffID` ASC),
  INDEX `FKTask543586` (`JobJobID` ASC),
  INDEX `FKTask168614` (`baseTaskbaseTaskID` ASC),
  CONSTRAINT `FKTask168614`
    FOREIGN KEY (`baseTaskbaseTaskID`)
    REFERENCES `sys`.`basetask` (`baseTaskID`),
  CONSTRAINT `FKTask543586`
    FOREIGN KEY (`JobJobID`)
    REFERENCES `sys`.`job` (`JobID`),
  CONSTRAINT `FKTask954031`
    FOREIGN KEY (`StaffstaffID`)
    REFERENCES `sys`.`staff` (`staffID`))
ENGINE = InnoDB
AUTO_INCREMENT = 13
DEFAULT CHARACTER SET = utf8;

```

```

-----  

-- Table `sys`.`enquire`  

-----  

CREATE TABLE IF NOT EXISTS `sys`.`enquire` (
  `TasktaskID` INT(10) NOT NULL,
  `enquireNumber` INT(11) NOT NULL,
  `information` VARCHAR(255) NOT NULL,
  PRIMARY KEY (`TasktaskID`, `enquireNumber`),
  INDEX `FKenquire217603` (`TasktaskID` ASC),
  CONSTRAINT `FKenquire217603`
    FOREIGN KEY (`TasktaskID`)
    REFERENCES `sys`.`task` (`taskID`))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;
```

```

-----  

-- Table `sys`.`fixeddiscount`  

-----  

CREATE TABLE IF NOT EXISTS `sys`.`fixeddiscount` (  

`DiscountdiscountID` INT(10) NOT NULL,  

`percentDiscount` INT(10) NULL DEFAULT NULL,  

PRIMARY KEY (`DiscountdiscountID`),  

INDEX `FKFixedDisco316205` (`DiscountdiscountID` ASC),  

CONSTRAINT `FKFixedDisco316205`  

FOREIGN KEY (`DiscountdiscountID`)  

REFERENCES `sys`.`discount` (`discountID`))  

ENGINE = InnoDB  

DEFAULT CHARACTER SET = utf8;  

-----  

-- Table `sys`.`flexiblediscount`  

-----  

CREATE TABLE IF NOT EXISTS `sys`.`flexiblediscount` (  

`DiscountdiscountID` INT(10) NOT NULL,  

`aquiredValue` INT(10) NOT NULL,  

`bandBandID` INT(10) NOT NULL,  

PRIMARY KEY (`DiscountdiscountID`),  

INDEX `FKflexibleDi276331` (`DiscountdiscountID` ASC),  

INDEX `FKflexibleDi397436` (`bandBandID` ASC),  

CONSTRAINT `FKflexibleDi276331`  

FOREIGN KEY (`DiscountdiscountID`)  

REFERENCES `sys`.`discount` (`discountID`),  

CONSTRAINT `FKflexibleDi397436`  

FOREIGN KEY (`bandBandID`)  

REFERENCES `sys`.`band` (`BandID`))  

ENGINE = InnoDB  

DEFAULT CHARACTER SET = utf8;

```

```

-- -----
-- Table `sys`.`variablediscount` --
CREATE TABLE IF NOT EXISTS `sys`.`variablediscount` (
  `DiscountdiscountID` INT(10) NOT NULL,
  `TasktaskID` INT(10) NOT NULL,
  `amount` DOUBLE NOT NULL,
  PRIMARY KEY (`DiscountdiscountID`, `TasktaskID`),
  UNIQUE INDEX `DiscountdiscountID` (`DiscountdiscountID` ASC),
  UNIQUE INDEX `TasktaskID` (`TasktaskID` ASC),
  INDEX `FKvariableDi1347` (`DiscountdiscountID` ASC),
  INDEX `FKvariableDi557826` (`TasktaskID` ASC),
  CONSTRAINT `FKvariableDi1347`
    FOREIGN KEY (`DiscountdiscountID`)
    REFERENCES `sys`.`discount` (`discountID`),
  CONSTRAINT `FKvariableDi557826`
    FOREIGN KEY (`TasktaskID`)
    REFERENCES `sys`.`task` (`taskID`))
ENGINE = InnoDB
DEFAULT CHARACTER SET = utf8;

```

```

SET SQL_MODE=@OLD_SQL_MODE;
SET FOREIGN_KEY_CHECKS=@OLD_FOREIGN_KEY_CHECKS;
SET UNIQUE_CHECKS=@OLD_UNIQUE_CHECKS;

```

END OF

DOCUMENTATION



ABSOLUTE CONSULTANCY

SIMPLE SOLUTIONS FOR COMPLEX CONNECTIONS