



**NANYANG  
TECHNOLOGICAL  
UNIVERSITY**  
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**Nanyang Business School**

# **AB0403**

## **Decision Making with Programming & Analytics**

### **Python coding and Data Analysis Analysis Report**

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**Tutorial Group 2-Seminar 27**

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## EXECUTIVE SUMMARY/OBJECTIVES

This report was commissioned to document our Team's proof-of-concept of our HR program that helps in onboarding tasks, especially with an increase in Intelligent Technology (IT) that assists users in reducing their workload in recent years. We will simulate the ideation and implementation of this report for a mock-up company, TechGiant.

Three different departments will be used for the prototype demonstration, and we will cover a comprehensive range of HR functions ranging from registration of new employee, pay system, expatriate contract functions, salaries, leaves, complaints, feedback, and viewing of company rules.

We will be using basic python codes and variables for this project as well as defining several of our own variables in order to smoothen the coding process. The team will also leverage For and While loops as well as assigning operators that will enable us to produce an excellent piece of report and codes that comes with several CSV files to store, write and read information. With expertise and consultation from our Course tutor, and foundational knowledge over the past 13 weeks, we managed to produce outstanding work and quality codes for our submission. A brief description of each of the 10 coded functions can be found in part 3 of this report.

Through collaborative learning and discussion as a team, we managed to derive our codes and gained a better understanding regarding the basics of decision making in programming and how we can leverage on these codes to build a better program in the future. We will use several fake employee data as reflected in the CSVs and screenshots to test the codes and display certain functions that requires login details. In part 2 of this report, we show our roles and responsibilities which we assumed according to our strengths and our video links on our reflective learning.

In conclusion, this report serves as a user manual for our HR programme prototype by describing each function in detail and with backup evidence. We also hope to help the organization strive towards excellence by making the HR department more efficient, despite the novice knowledge that we possess.

### 1. Link to recorded videos

Lim Qing Rui (U2010816G)	<a href="https://youtu.be/IrIvrSyrrFU">https://youtu.be/IrIvrSyrrFU</a>
Phang Wen Wei (U2010354K)	<a href="https://youtu.be/bfc0aGglHh8">https://youtu.be/bfc0aGglHh8</a>
Melvin Ng (U2010779D)	<a href="https://youtu.be/ccPbtJrqTZM">https://youtu.be/ccPbtJrqTZM</a>
Chuah Yun Shiuan Raphaela (U2010371L)	<a href="https://youtu.be/IWjK92DKEzw">https://youtu.be/IWjK92DKEzw</a>
Alvin Lim Swee Hung (U2010149F)	<a href="https://youtu.be/m4DvBhJ--ls">https://youtu.be/m4DvBhJ--ls</a>

## 2. Work/Responsibility distribution

Name	Role(s)	Responsibilities (Description)
Lim Qing Rui	Leader, edit report, Organise codes for Part 1, Analyse and code database (Part 2)	<p>Distribution of responsibilities for team and benefits.</p> <p><u>Part 1</u></p> <ul style="list-style-type: none"> <li>- Contributed to stitching of code for team and coding of function 3 and 4. Organizing of codes and report and typing report.</li> <li>- Brainstorming flow and discussing of flow of report and codes.</li> <li>- Proofread report, debugging and checking of codes before submission. Troubleshoot any errors.</li> </ul> <p><u>Part 2</u></p> <ul style="list-style-type: none"> <li>- Analysis of database to inter-database to observe trends and generate valuable insights from the codes and data.</li> <li>- Provided solutions to problems faced in database and increase the utilization of matplotlib in generating graphs.</li> <li>- Proofread poster and editing of poster</li> </ul>
Phang Wen Wei	<p>Coder (for function 7&amp;8)</p> <p>Poster Designer</p> <p>Graph analyst for part 2</p>	<p><u>Part 1</u></p> <ul style="list-style-type: none"> <li>- Contributed to the discussion of what we want to be included in our HR program</li> <li>- Developed the codes for function 7 (Company rules and regulation) and function 8 (Feedbacks and comments for the company)</li> <li>- Helped team members figure out areas where the code did not function or could be better improved on.</li> </ul> <p><u>Part 2</u></p> <ul style="list-style-type: none"> <li>- Responsible for compiling the data from Part 2 (Data analytics) and putting them into the 2-page poster.</li> <li>- Arranged the information in a way that was comprehensive and clear so users understand what the project and graphs are about.</li> <li>- Identified insights and problems from the graph generated by codes and discovered solutions to resolve problems.</li> </ul>
Melvin Ng	Coder (for analytics and function 1 & 2), report writer & analyst for part 1 and 2	<p><u>Part 1</u></p> <ul style="list-style-type: none"> <li>- Brainstorming of the HR programme features</li> <li>- Coding, testing and debugging functions 1 and 2 of the HR programme</li> <li>- Contributed to writing the introduction, user menu and functionality description for the report</li> </ul> <p><u>Part 2</u></p> <ul style="list-style-type: none"> <li>- Analysis of the following databases using Jupyter Notebook: Absentees, Glassdoor Salary, HRDataset, Turnover data</li> </ul>

		<ul style="list-style-type: none"> <li>- Generated graphs for the following databases mentioned above to derive insights</li> <li>- Connecting and analysing insights derived from data to develop solutions</li> </ul>
Chuah Yun Shiuan Raphaela	Coder (for function 9 & 10) and Analysed database for Part 2	<p>Part 1</p> <ul style="list-style-type: none"> <li>- Contributed to writing the functionality description for the report</li> <li>- Developed codes for function 9, leave and claim status and 10, sales commission/employee bonus</li> </ul> <p>Part 2</p> <ul style="list-style-type: none"> <li>- Contributed to identifying relevant information that value adds to the poster</li> <li>- Carried out research to come up with solutions for the problems that are present in the graphs generated</li> </ul>
Alvin Lim Swee Hung	Coder & Analyst	<p>Part 1</p> <ul style="list-style-type: none"> <li>- Recommended HR programme features</li> <li>- Developed &amp; tested the codes for functions 5 &amp; 6 of the HR programme</li> <li>- Suggested improvements and spotted errors on the codes</li> </ul> <p>Part 2</p> <ul style="list-style-type: none"> <li>- Analysis of “employee”, “employment_rate” datasets using Jupyter</li> <li>- Generated graphs for insights &amp; visualisation to recommend solutions</li> <li>- Researched solutions to recommend</li> </ul>

## **2. Introduction to company & HR software**

TechGiant is a local start-up that specialises in selling commercial software. The company is divided into 3 departments, mainly the Sales, Administrative and IT department. In order to help manage the growing number of employees, the IT department has developed a Human Resource (HR) software which can help the administrative staff better manage their workload. The HR software will help the company manage the onboarding process, gather feedback, and manage leave/claims requests. Employees will also be able to access the HR software to perform a variety of HR functions after the onboarding process, however, certain privileges will be reserved only for the HR team in the administrative department.

## **3. Functionalities designed for prototype**

The prototype for the HR programme consists of 10 different functions that perform a variety of roles. These functions are interconnected and work together to form a HR software that can assist users with HR roles.

Function 1 helps with employee registration and the onboarding process. This function will be used whenever newcomers arrive in the company. It will help HR with the collection of employee information and store the data within a database. This helps automate the onboarding process and reduces the need for paperwork as well as data entry, given that the inputs collected will be written into the data base in real time. This function will also provide an employee ID and password to the new employees upon completion of the onboarding tasks. The username and password can then be used to access other features within the HR software.

Function 2 is designed for administrative use and access is restricted to only members from the HR team. This function provides a platform for the HR executives to easily create, retrieve and update information relating to existing employees through the multiple sub-functions. These sub-functions include, viewing and editing employee data, ranking employee performance and the approval of employee leaves and claims. Finally, this function also allows HR employees to update or create of new onboarding quizzes that will be used during the onboarding process. With this function, the HR team can effectively update employee data to reflect any changes that occur over the course of their employment.

Function 3 allows existing employees to change their current employee information by logging into the HR programme using the employee ID and password generated during the onboarding process. Upon logging in, employees can view their current employee data and make changes to their name, IC, address, contact number or current password if needed. This function allows employees to update their personal information in the event of change without the need to approach HR, thus making things more efficient and reducing the workload for the HR team. Any input mistakes made during the onboarding process can also be rectified here with little effort.

Function 4 enables our expats to adjust their pay in terms of the currency received and allocate the allowance provided by the company between housing and school (if they have kids). Currently, the prototype allows employees to convert a portion of their SGD pay to USD dollars or MYR ringgit, other currencies may be added in the future as the company expands its global presence. The purpose of this sub-function is to enable employees to hedge against exchange rate risks. Next, employees can also freely allocate the allowance provided by the company

between housing and schooling expenses, this sub-function provides greater flexibility for our expats when it comes to searching for housing and school for their kids as it allows them to set their own budget based on the allocation. However, to prevent abuse, expats are not able to change their allocation for the pay conversion and allowances once it is confirmed. Any changes thereafter will require them to approach the HR department.

Function 5 is a claim and leave application system. Through this system, employees will be able to apply for leave and submit claims for approval. Employees will be required to log in through their employee ID and enter the number of leave days they want to apply, the reason for the application and the start date. Like the leave application, the claims submission would require the claim amount and the purpose of the claim to be submitted. Once, this is done, the leave and claims can then be approved by HR team upon verification. This function provides a convenient and easy way for employees to submit their leave and claims.

Function 6 allows complaints to be filled against a department or another employee. Employees will be able to file an official complaint through this function by specifying the target of the complaint, whether it is addressed towards a department or an employee and submitting the reason for the complaint. This will allow HR to launch a formal investigation into any wrongdoings or enable grievances to be identified and addressed early. This will help maintain a safe and productive workplace environment that is productive.

Function 7 consists of the rules and regulations of the company. By running the function, employees will be able to obtain information about the category one rules, category two rules and information about leave entitlement and leave types. This function enables employees to search up any information related to the company rules and regulations and serves as a platform that allows them to revisit company policies if they had forgotten about them after onboarding.

Function 8 provides a platform for employees to voice their opinion about the company. Employees can choose to remain anonymous when providing their feedback or may choose to make themselves known. There are no limitations as to the feedback topics and employees can feel free to comment on various topics such as salary, workplace environment or benefits. This function enables the HR department to gather feedback about the company and develop policies that can help raise morale and improve productivity.

Function 9 allows employees to view the status of their leave and claim. By entering their employee ID, they would be able to check on the status of their leave and claim. This allows them to approach their managers or the HR department in the event their application is rejected or still pending after a long time.

Finally, function 10 provides information to employees with regards to their commission (for sales roles) and bonuses (for non-sales roles). For sales personnel, they would be able to key in the amount of sales they have generated for the month to calculate the commission that they are entitled to receive. As for non-sales personnel, they would be able to check if they are able to receive a bonus for the current month, based on the overall performance of the company. This function provides a quick and easy way for employees to calculate and check their commission and bonuses.

## 4. User menu with illustrations

Upon launching the programme, the user will be prompted to select one of the 10 functions designed to smoothen and introduce information technology to make the HR Department more efficient in work matters related to onboarding, leaves and claims and feedback data gathering to improve organisational efficiency and effectiveness. HR will be able to utilize the programme to modify employee data through administrative access and oversee the collection of data in the form of CSV files which comes with the programme. The simple user interface displays a menu function to allow for selecting of function by decreasing perplexity through increasing foolproofness.

```
Welcome to our employee management system. To proceed, please select between
1-10:
1)To begin new employee registration and onboarding tasks
2)To access admin accounts and privileges
3)To view and edit your own current employee data
4)To manage your salary and allowance
5)To request for either a leave or a claim
6)To file a complaint against a department or another employee
7)To view company rules and regulations
8)To provide feedback and comments for our company
9)To view the status of your leave or claim
10)To declare the amount of sales you made or check if you are eligible for bonus
depending on company's performance
Input:  → Run python script and key in function that we want to use from programme
```

### Function 1: Employee Registration & Onboarding Tasks

Function 1 registers information of any new employees and provides onboarding activities to help these new employees understand their new positions and job requirements. To start new employee registration, the new employee must run the programme and enter the number 1. After which, the employee would be required to key in their address, name, IC, the date they joined the company, gender and citizenship. Following that, employees would need to enter the contract type. For Singaporeans, they can simply enter the number 1 (Local contract type) while foreigners who will be working under an expatriate contract can enter the number 2 (Expatriate contract type). After the employee has finished filling up their personal information, they would be prompted to fill in their job grade (Manager/Sales representation/IT support), followed by the department they are entering (Sales/IT/Admin roles). These will be performed through entering input of 1 to 4. The employees would then need to fill up the username that they want to use. Upon this, the programme would generate an account for the employee, with the employee's employee ID and account password which can be used for other function such as feedback and leave claims.

The programme will specify logistical requirement for each job/role type:

- Sales department will be provided with a laptop and phone.
- IT department will be provided with a desktop and laptop.
- Administrative department will be provided with a laptop only.



```

10)To declare the amount of sales you made or check if you are eligible for bonus depending on company's performance
Input: 1 → Step 1: Run the program and key in "1"
test
Please fill up the following information

Address: 10 Anson Road #35-02 INTERNATIONAL PLAZA
Name: Wen
IC: 2345645
Contact No.: 243345345
Date joined (Date format is DD-MM-YYYY): 02-09-2020
Gender(1 for male, 2 for female, 3 to prefer not to say): 1
Citizenship (eg. Singaporean): Singaporean

Contract type
Enter 1 if local
Enter 2 if expat
Input: 1 → Step 3: Input the contract type (eg. Local Contract)
Thank you. We will now proceed with account creation. Please enter the following information

Please enter your Job Grade
1: Manager(Sales)
2:Manager(Admin)
3:Sales Representative/Associate/Analyst/Consultant
4:IT/Admin support Representative/Associate/Analyst/Consultant
Input: 1 → Step 4: Input the job grade you are applying for

What is your department?
1 for Sales
2 for Admin
3 for IT
Input: 1 → Step 5: Input the department you are applying to

Please enter your username: Wen2077 → Step 6: Enter the username you would like to use
Your Employee ID is: 8DQUBVEE
Your account has been created
Your password is: 3CF6I8YGVD
Based on your department, our company will provide you with a laptop and a phone.

```

After the employee's account has been created, the employee would be required to indicate their level of IT knowledge with numbers "1" to "3", with "1" indicating a low level of IT knowledge and "3" indicating that the employee has a high level of IT knowledge. Following that, the employee would need to indicate whether or not they are proficient in any other languages other than 'English', 'Chinese', 'Malay' and 'Tamil'. "Y" indicates that they are proficient in other languages outside of the 4 given and "N" indicates they are only proficient in these 4 languages. If there are additional languages, the programme will write and store information of the language into the EmployeeInfo CSV file.

Then, they would need to indicate their level of proficiency in each language with numbers "0" to "3", with "0" being that they do not speak the language and "3" being that they are excellent in speaking the language. The employee would then be asked how many years of relevant experience they have. After that the employees would be directed to the section where they can either to choose to look at the rules by inputting either "1", "2" or "3" into the system or input "9" to leave. If the employee chooses to input "9", they would be asked to complete a 10-question quiz.

```

Please enter your level of IT knowledge, where 1 is low, 2 is average and 3 is high: 3 → Step 7: Enter IT knowledge level

Aside from the following languages ['English', 'Chinese', 'Malay', 'Tamil'], do you have any other languages that you are proficient in? Y/N: n → Step 8: Input "Y" or "N" to indicate whether there are any other language you are proficient in
The languages that you are proficient in are as follows: ['English', 'Chinese', 'Malay', 'Tamil']

Please enter your language proficiency for English (0 for do not speak, 1 for poor, 2 for good, 3 for excellent): 1 → Step 9: Enter the proficiency level for each language

Please enter your language proficiency for Chinese (0 for do not speak, 1 for poor, 2 for good, 3 for excellent): 3

Please enter your language proficiency for Malay (0 for do not speak, 1 for poor, 2 for good, 3 for excellent): 3

Please enter your language proficiency for Tamil (0 for do not speak, 1 for poor, 2 for good, 3 for excellent): 3

How many years of experience do you have?: 6 → Step 10: Enter how many years of experience you have
You will now be directed to understand the rules and regulations of our company. Please carefully read and understand the rules and regulations of our company.
Here are the rules and regulations of our company

What rules would you like to read?
1)Category one rules
2)Category two rules
3)Leave entitlement and types of leave
Press 9 to leave
Input: 9 → Step 11: Input "1", "2" or "3" to view the rules or input "9" to move on to the quiz.

```

For the quiz, employees would be required to enter either “True” or “False” to answer the questions. After answering a question, the programme would indicate whether the employee got the question correct or wrong. The figure below shows an example if the employee was to do the quiz and achieved a score below 8. The programme would indicate that the employee has failed the quiz and would need the employee to retry the quiz. By default, we have set all quiz answers to False. The questions and respective answers can be altered in the [rules CSV file](#).

```

The quiz will now be conducted. Answer the following TRUE or FALSE questions as best as you can. If you scored less than 8 out of 10, the quiz will be repeated. Good luck!
You are currently on question number 1
What is the answer to the following question?

We only accept bitcoin as a form of payment: False → Step 12: Enter either "True" or "False" to answer the quiz questions
Correct
You are currently on question number 2
What is the answer to the following question?

Company property can be used without any concern for its wellbeing: True
Incorrect
You are currently on question number 3
What is the answer to the following question?

Our company's name is Apple: False
Correct
You are currently on question number 4
What is the answer to the following question?

You are allowed to freely disobey instructions or orders: False
Correct
You are currently on question number 5
What is the answer to the following question?

Do not be honest when declaring your sales: True
Incorrect
You are currently on question number 6
What is the answer to the following question?

Our company deals with data: True
Incorrect
You are currently on question number 7
What is the answer to the following question?

You can use the company's resources for your own benefits: False
Correct
You are currently on question number 8
What is the answer to the following question?

```

```

All the answers to the questions in this quiz are true: False
Correct
You are currently on question number 9
What is the answer to the following question?

You are allowed to reveal company's secrets to competitors: False
Correct
You are currently on question number 10
What is the answer to the following question?

You are allowed to freely lie about your information: False
Correct
You have failed the quiz. Please retry the quiz
Here are the rules and regulations of our company
→ If employees were to score below 8 for the quiz, the employee would be asked to redo

```

The programme would prompt the employee to retry the quiz by asking the employee “What rules would you like to read?” and the employee would input “9” so that the quiz would be conducted again. Once the employee has passed the test, his/her account will be created and the following statement will be printed:

**Congratulations, you have succeeded.**

**Creating employee data....**

**Your account has been created for the company's website.**

**Your onboarding task is now complete. Thank you.**

The programme will then close itself.

```

What rules would you like to read?
1)Category one rules
2)Category two rules
3)Leave entitlement and types of leave
Press 9 to leave
Input: 9
→ Program would ask for an input of either "1", "2", "3" or "9" and you will input "9" to attempt the quiz again
Thank you for reading the rules and regulations of our company.
The quiz will now be conducted. Answer the following TRUE or FALSE questions as best as you can. If you
scored less than 8 out of 10, the quiz will be repeated. Good luck!
You are currently on question number 1
What is the answer to the following question?

All the answers to the questions in this quiz are true: False
Correct
You are currently on question number 2
What is the answer to the following question?

Our company does not conduct any form of sales: False
Correct
You are currently on question number 3
What is the answer to the following question?

You can use the company's resources for your own benefits: False
Correct
You are currently on question number 4
What is the answer to the following question?

Our company deals with data: False
Correct
You are currently on question number 5
What is the answer to the following question?

Smoking is prohibited during working hours: False
Correct
You are currently on question number 6
What is the answer to the following question?

You are allowed to freely disobey instructions or orders: False
Correct
You are currently on question number 7
What is the answer to the following question?

```

```

Our company's name is Apple: False
Correct
You are currently on question number 8
What is the answer to the following question?

You are allowed to reveal company's secrets to competitors: False
Correct
You are currently on question number 9
What is the answer to the following question?

We only accept bitcoin as a form of payment: False
Correct
You are currently on question number 10
What is the answer to the following question?

Do not be honest when declaring your sales: False
Correct
Congratulations, you have succeeded
Creating employee data....
Your account has been created for the company's website.
Your onboarding task is now complete. Thank you.
→ When the employees scores above 8, their onboarding task would be completed.

```



## Function 2: Admin Account Access

Function 2 allows the HR personnel to access different functions. For the HR personnel to access the different functions, they must first run the programme by entering the number “2”. Before they can access the different functions, the HR personnel would need to enter the case-sensitive username and password to log into their account, which is HRLOGINONLY and HRPASSWORD. After which, they would be able to access the different functions by entering numbers ranging from “1” to “5”. For example, if they were to input “1”, they would be choosing to view the employee’s data. The programme would then prompt them to enter the employee ID for the employee’s data that are interested in.

```

10)To declare the amount of sales you made or check if you are eligible for bonus depending on company'
performance
Input: 2 → Step 1: Run the program and key in "2"

Please enter the username of your HR personnel account: HRLOGINONLY
Please enter the password of your HR personnel account: HRPASSWORD
Login successful → Step 2: Enter the username and password to log in to
your HR personnel account

What would you like to do?
To view employee data, press 1.
To edit employee data, press 2.
To add extra onboarding quizzes for employees, press 3.
To rank the performance of employees, press 4.
To approve employees' leaves and claims, press 5:
Input: 1 → Step 3: Input "1", "2", "3", "4" or "5" to access the different functions (eg. View employee data)

Please enter the employee ID that you would like to view: P1LV2LUJ → Input the employee ID to view the employee's data
Employee Index number: 0
Employee ID: P1LV2LUJ
Employee name: Wen
Employee NRIC: 2345645
Employee Contact No.: 243345345
Employee citizenship: Singaporean
Employee joined since: 2/9/2020 0:00

```

If they were to input “2”, they would be choosing to edit the employee’s data. The HR personnel would first be asked for index of the employee’s data they would like to edit. After that they would be asked to input any value between “0” to “16” to indicate specifically which information of the employee they would like to indicate. Referencing the figure below, if the HR personnel selects “0”, they would be choosing to edit the employee’s “Employee ID”. The programme would print out the original Employee ID of the employee, then ask the HR personnel to enter the new value they would like to change to.

```

Login successful
What would you like to do?
To view employee data, press 1.
To edit employee data, press 2.
To add extra onboarding quizzes for employees, press 3.
To rank the performance of employees, press 4.
To approve employees' leaves and claims, press 5:
Input: 2 → Input "2" to edit employee's data
Please choose an employee to edit their data

Please enter the index of the employee that you would like to edit: 2 → Enter the index of the employee whose data you would
be editing

Please choose which information of the employee that you would like to edit (0-16):
0)Employee ID
1)Employee Password
2)Name
3)Gender
4)department
5)IC
6)username
7)Job Grade
8)Contract Type
9)IT knowledge
10)Years of Experience
11)Languages
12)Language knowledge
13)Contact
14)Address
15)Date
16)Citizenship
Input: 0 → Input any number from "0" to "16" to chose the employee's information that you would like to edit
The info that you would like to edit is Q76Q19UR

Please enter the new value that you would like to change it to: Q75Q20UR → Enter the new value that you want to
change to

```

If they were to input “3”, they would be accessing the function to add extra question(s) to the onboarding quiz for employees. After which, the HR personnel can enter the additional question that he/she would like to add. Then the programme would prompt them to provide the answer to this additional question. The answer to these additional questions can only be either “True” or “False” since the answers of the quiz can only be either of the 2.

```

Login successful
What would you like to do?
To view employee data, press 1.
To edit employee data, press 2.
To add extra onboarding quizzes for employees, press 3.
To rank the performance of employees, press 4.
To approve employees' leaves and claims, press 5:
Input: 3 → Input "3" to add an extra onboarding quiz question for employees
Please enter the question: It is ok to bring in visitors without prior authorisation.
Please enter the answer: False
  
```

Enter the extra the extra question that is going to be added and the answer to this additional question

If they were to input “4”, the HR personnel would be choosing to rank the performance of the employees, which would then ultimately determine whether the employee is qualified to be suggested for a promotion. After indicating that they would like to use this function, they would need to enter the index of the employee that they would be interested in editing the ranking of. Following that, the HR personnel would need to rate the employee based on different indicators with the numbers “1” to “5”. These indicators include -- employee’s attendance, work attitude, co-worker evaluation rating, innovation and quality of work. After rating the employee, the HR personnel would be prompted to give any comments for the employee of interest. Finally, the employee’s KPI score would be calculated. To be qualified to be suggested for a promotion, the employee would need to score a KPI of above 4.5.

```

Login successful
What would you like to do?
To view employee data, press 1.
To edit employee data, press 2.
To add extra onboarding quizzes for employees, press 3.
To rank the performance of employees, press 4.
To approve employees' leaves and claims, press 5:
Input: 4 → Input "4" to rank the performance of employees
Please enter the index of the employee that you would like to edit his ratings: 2
Please enter the Attendance rating of your selected employee(1-5): 5
Please enter the Work Attitude rating of your selected employee(1-5): 5
Please enter the Co-worker evaluation rating of your selected employee(1-5): 5
Please enter the Innovation of your selected employee(1-5): 5
Please enter the Quality of work of your selected employee(1-5): 5
What comments do you have for this employee? Hardworking
This employee has a KPI of above 4.5, and has performed well. He will be suggested for a promotion
Your kpi score average is 5.0
  
```

Enter employee's index that you would like to edit his/her rating

Input any number between "1" to "5" to rate the employee under the different KPI indicators

Enter any comments for this for this employee

If they were to input “5”, the HR personnel would be able to view the outstanding leave and claims applications. A list of employee leave/claim requests will be printed out individually. The HR administrator will be able to edit employees’ leaves and claims from the leave and claim CSV and choose to approve, deny, or put on pending as accordingly. The result of the HR’s decision will be written into the CSV file and can be viewed by respective employee in function 9 of the programme.

```

What would you like to do?
To view employee data, press 1.
To edit employee data, press 2.
To add extra onboarding quizzes for employees, press 3.
To rank the performance of employees, press 4.
To approve employees' leaves and claims, press 5:
Input: 5
Employee P1LV2LUJ has request for a claim of 1500 for "Housing" reasons
Would you like to approve of this employee's claim? To approve, press 1. To save for later, press 2. To Deny, press 3:
  
```

### **Function 3: Changing of employee data**

Function 3 enables employees to change their personal details such as their name (1), IC (2), address (3), contact number (4) and password (5). To begin, employees will have to login with their employee ID and password. After which the programme will display their current employee personal details and prompt them on which personal data would they like to make changes to. After selecting the information they want to edit, the programme prompts them to enter the change. This change will then be reflected in the database in the Employee Info CSV file. The change will also be viewable by the HR administrator in function 2.

```

10)To declare the amount of sales you made or check if you are eligible for bonus depending on company's performance
Input: 3 → Step 1: Run the program and key in "3".

Please enter your employee ID: P1LV2LUJ → Step 2: Enter employee ID.

Please enter your password: T
Login successful
Your current employeeID is: P1LV2LUJ
Your current name is: Wen
Your current IC is: 2345645
Your current address is: ABC Prinsep street
Your current contact number is: 243345345
Your current account password is: T

What would you like to edit?
Press 1 to edit your name
Press 2 to edit your IC
Press 3 to edit your address
Press 4 to edit your contact number
Press 5 to change your current password:
Input: 4 → Step 3: Input which data information you would like to make changes to (eg. Contact Number).

Please enter your new contact number: 87654321 → Step 4: Input the change you'd like to make (eg. Updated Contact Number).

```

### **Function 4: Salary and allowance management**

Function 4 allows employees to manage their salary and allowances. This function is only available for non-local employees such as expats (employees under contract type 2). Here expats are enabled to convert their salary and allocate their allowance to their desired currency. By default, the programme allocates allowance of \$3000 for normal employees and \$4000 for managers, however, if the year of experience is greater than 10, the employee will be allocated \$5000 in allowance.

```

10)To declare the amount of sales you made or check if you are eligible for bonus depending on company's performance
Input: 4 → Step 1: Run the program and key in "4".

Please enter your employeeID: S7DMLUUZ → Step 2: Enter employee ID to login.
Login successful

Please enter your function.
1)For salary conversion
2)For allowance management:
Input: 1 → Step 3:Input "1" to convert salary (SGD) to another currency.
Your current salary allocation is:
SGD: 2800
USD: 150.0
MYR: 0

Please enter the amount of currency that you would like to convert: 50
50SGD of your salary will now be converted

Please enter the conversion that you would like to process:
1) SGD to USD(1:0.75)
2) SGD to MYR(1:3.05)
Input: 2 → Step 4:Input "1" or "2" to convert salary to your desired currency (eg, 1:USD , or 2:MYR)
Your amount of SGD: 50 will now be converted to MYR152.50
The next time the employee logs in, the converted salary will be displayed

Please enter your function.
1)For salary conversion
2)For allowance management:
Input: 1
Your current salary allocation is:
SGD: 2750
USD: 150.0
MYR: 152.5 → Converted Salary

```

Under salary management, employees are able to convert their (SGD) salary to be distributed in different currencies. Firstly, the employee must login with their ID. The programme will prompt the employee for their function. Selecting "1" will display what the employee's current salary allocation is among the different currencies. The programme then prompts them on the amount they would like to convert. When an input is given, the programme displays the specific currency rates and further prompts the employee on which currency they would like their selected (SGD) amount be converted (eg. 1:for USD, 2:for MYR) and be allocated to in the future. After the selection, the programme will then inform the employee how much the selected amount is converted to. This information will then be reflected in the Employee Salary database. The next time the employee logs in to function 4, the new salary allocation will be displayed. The employee will be remunerated in both his local currency and overseas currency transferred to his other point-of-contact back home overseas.



```

10)To declare the amount of sales you made or check if you are eligible for bonus depending on company's performance
Input: 4 → Step 1: Run the program and key in "4".

Please enter your employeeID: S7DMLUUZ → Step 2: Enter employee ID to login.
Login successful

Please enter your function.
1)For salary conversion
2)For allowance management:
Input: 2 → Step 3:Input "2" to manage your allowance.
→ Entitled allowance is displayed.
Your current allowance is SGD3000. How much of your allowance would you like to allocate?: 500
Your current allowance of SGD500 will now be allocated.
→ Step 4:Input amount you wish to allocate allowance to.

What would you like to allocate it to?
1)To allocate towards housing allowance
2)To allocate it towards schooling allowance: 1 → Step 5:Input "1" or "2" to allocate allowance to desired area (eg.
1:Housing, 2: Schooling)

The next time the employee logs in, the program will display the remaining entitled allowance that has not been allocated

10)To declare the amount of sales you made or check if you are eligible for bonus depending on company's performance
Input: 4

Please enter your employeeID: S7DMLUUZ
Login successful

Please enter your function.
1)For salary conversion
2)For allowance management:
Input: 2 → Remaining entitled allowance is displayed.
Your current allowance is SGD2500. How much of your allowance would you like to allocate?:

```

Under allowance management, employees are able to allocate their allowances to their desired areas. To begin, employees need to input "4" and login with their employee ID. Followed by inputting "2" to access the allowance management subfunction. After which, the programme will display their current entitled allowance and prompt them on what allowance amount they would like to allocate. Next, it will inform them on the different areas they could allocate their allowance to (e.g.1:for Housing, 2:for Schooling). After the entering their selection, this information will then be reflected in the Employee Salary database. The next time the employee logs in to function 4, the remaining unallocated allowance will be displayed.

```

10)To declare the amount of sales you made or check if you are eligible for bonus depending on company's performance
Input: 4 → Step 1: Run the program and key in "4".

Please enter your employeeID: P1LV2LUJ → Step 2: Enter employee ID.
Your employee ID is either not recognized or you are not under the expat contract. Please contact HR if you think this is an
error.
→ Employees that are under local contract (Contract type 1), will not be able to manage their salary
and allowance and will receive this error message

```

If employees are local (Contract type 1: Local) or an unrecognized employee ID is entered, the programme will display an error message as follows: "Your employee ID is either not recognized or you are not under the expat contract. Please contact HR if you think this is an error."



### Function 5: Leave & Claims System

Function 5 serves as a platform that enables employees to submit their applications for leave and claims. TechGiant provides 12 days of annual leave for non-management employees (job grade 2 and 4) and 16 days of annual leave for managers (job grade 1 and 2). To start the leave application process employees must run the programme and enter the number 5. Afterwards, employees will be required to key in their employee ID. Following that, simply enter the number 1 to access the leave application system. Once inside, employees will be required to fill in the number of leave days requested, the reason for the leave application and the leave start date. The leave balance for each employee will also be shown. Upon successful application, the leave status will be set to pending, while awaiting HR approval.

```

10)To declare the amount of sales you made or check if you are eligible for
bonus depending on company's performance
Input: 5 → Step 1: Run the programme and key in "5".

Please enter your employeeID: P1LV2LUJ → Step 2: Enter Employee ID

What would you like to apply for?
1)Leave
2)Claim
Input: 1 → Step 3: Key in "1" to access the leave
system
How many days of leave would you like to request for? You have 15 days of leave
left: 2 → Step 4: Enter No. of days
Please submit the reason for your leave. Your leave will be reviewed and
approved once it is accepted: Holiday → Step 5: Enter reason for leave.
Leave start date (Date format is DD-MM-YYYY): 13-04-2021 → Step 6: Enter start date
  
```

Claims refer to benefits that employees can receive in addition to their salaries and bonuses. TechGiant allows claims of up to \$3,000 a year for non-managers and \$4,000 a year for managers. Claims are intended to cover areas such as, transportation expenses (relating to work), medical/dental fees and overtime pay. To start the claims application process employees must run the programme and enter the number 5. Afterwards, employees will be required to key in their employee ID. Following that, simply enter the number 2 to access the claims application system. Once inside, employees will be required to fill in the claim amount and the reason for the claim. The claim balance for each employee will also be shown. Upon successful application, the claim status will be set to pending, while awaiting HR review and approval.

```

10)To declare the amount of sales you made or check if you are eligible for
bonus depending on company's performance
Input: 5 → Step 1: Run the programme and key in "5".

Please enter your employeeID: P1LV2LUJ → Step 2: Enter Employee ID

What would you like to apply for?
1)Leave
2)Claim
Input: 2 → Step 3: Key in "2" to access the claims
system
How much claim would you like to receive? You have 1500 in claims left: 100
Please enter the purpose of your claim. It will be reviewed and approved once it
is accepted: Medical → Step 5: Enter reason for claim.
  
```

Finally, to review the status of the claims and leave, employees can make use of function 9 which is stated below this report.

### **Function 6: Complaints System**

Function 6 enables employees to submit a formal complaint with regards to a department or an individual. Employees will be able to report any unethical or inappropriate behavior in the workplace through this system. To begin, employees simply have to run the programme and enter the number 6. Afterwards, employees must select whether to file a complaint against a department or an individual. The user should enter 1 to submit a complaint about an employee, and the function will prompt for a description of the complaint against the employee. Once both inputs are received, the programme returns the statement that the Input is received, and the HR department will review the complaint and take action against the employee where necessary. The submitted complaint will be stored in the database named “complaints” in a CSV file and would only be accessible by the HR team.

```

10)To declare the amount of sales you made or check if you are eligible for
bonus depending on company's performance
Input: 6 → Step 1: Run the programme and key in "6".

What would you like to complain about?
Enter 1 to submit a complaint about an employee
Enter 2 to submit a complaint about a department:
Input: 1 → Step 2: Select target of complaint.

Please enter the name of the employee or the ID of the employee: Pete
→ Step 3: Enter department name or employee detail

Please enter the complaint that you have against that employee: Rowdy behaviour
in the workplace.
→ Step 4: Enter complaint.

Input received. We will review your complaints and action will be taken based on
our investigation. Thank you.

```

Similar to the user interface of employee complaint in function 6, entering selection option 2 after running the complaint system (Function 6) in the HR Programme allows the user to enter the department that they find fault against as well as the complaint. Once both inputs are received, the programme returns the statement on receipt of input, and the HR department will review the complaint and take action against the department where necessary. The submitted complaint will be stored in the database named “complaints” in a CSV file and would only be accessible by the HR team.

### **Function 7: Company Rules and Regulations**

Function 7 enables all employees to review the company rules and regulations. This function provides information about the do's and don'ts as well as the various type of leave available to employees. It serves as a helpful reminder for employees who have forgotten about certain regulations or leave entitlements. To begin the process, employees simply have to run the HR programme and enter the number 7. Upon accessing the function, employees will be asked to key in a number from 1 to 3, doing so will allow them to access the databases named “categoryLeave”, “categoryOneRules” and “categoryTwoRules”. The user can access the three databases an unlimited number of times. To exit, the user simply has to press 9.

```

Input: 7 → Step 1: Run the programme and key in "7".
Here are the rules and regulations of our company

What rules would you like to read? → Step 2: Select database to access.
1)Category one rules
2)Category two rules
3)Leave entitlement and types of leave
Press 9 to leave → Press "9" to exit.
: 1 → Selected database will be
Category one rules → printed below
These are rules where a breach will render an employee liable to disciplinary
action. Repeated breaches could lead to dismissal.
Absence - failure to notify employer of being unable to report for work at the
earliest possible opportunity. Failure to indicate a reason for the absence and

```

Running through the codes, the rules will be generated from the CSV files as aforementioned, and a general overview of the rules are as follows:

- Category one rules: These are rules where a breach will render an employee liable to disciplinary action. Repeated breaches could lead to dismissal. They encompass rules ranging from absence to drinking and smoking as well as an employment clause which states that working for TechGiant will not allow one to work for similar businesses in the same period of time.

```

Press 9 to leave
Input: 1
Category one rules
These are rules where a breach will render an employee liable to disciplinary
action. Repeated breaches could lead to dismissal.
Absence - failure to notify employer of being unable to report for work at the
earliest possible opportunity. Failure to indicate a reason for the absence and
probable duration of absence.
Absence - in the case of sickness of 7 days or less, failure to provide self-
certification immediately upon return to work. In the case of sickness absence in
excess of 7 days, failure to supply a medical certificate.
Absence - in the case of foreseeable reasons, failure to obtain prior
authorisation from supervisor
Absence - leaving employer's premises during working hours
Timekeeping - lateness and leaving work early
Company property - failure to treat company property with due care. Removal of
company property from premises without prior authorisation. Using company
property, time, materials and equipment for unauthorised work.
Making and receiving private telephone calls
Bringing visitors on to company premises without prior authorisation
Smoking in areas where it is not permitted
Drinking - bringing or consuming alcoholic beverages on company premises
Gambling or making collections on company premises
Meetings - arranging or holding private meetings during working hours or on the
company's premises without prior authorisation
Sole employment - engaging in other employment or business activities where there
is a potential or actual conflict between the interests of the company and those
of the other business
Breach of email/internet policy

```

- Category two rules: These are more serious offences constituting gross misconduct and rendering an employee liable to summary dismissal ranging from theft to misconduct through breach of confidential information and propriety software.

```

Press 9 to leave
Input: 2
Category two rules
These are more serious offences constituting gross misconduct and rendering an
employee liable to summary dismissal:
Fighting and physical assault
Theft - of company and private property
Gross immorality
Refusal or failure to carry out a reasonable instruction
Wilful damage to company property
Abuse of arrangements for clocking in and out
Falsification of timesheets or bonus sheets
Disclosure of confidential company information
Seriously endangering the health and safety of himself/herself or others
Any other reason giving rise to a right of summary dismissal, whether at common
law or by statute

```

- Leave entitlement: Annual leave is an entitlement given to staffs to ensure well-being and improve well-being, productivity and efficiency of staffs. They range from sick leave to maternity leave and special medical leave requests.

```

2)Category two rules
3)Leave entitlement and types of leave
Press 9 to leave
Input: 3
Leave Entitlement
Annual leave - Annual leave is a facility given to every staff annually for the
wellbeing of the staff and also to improve the productivity and efficiency of the
staff.
Sick leave - Paid sick leave is given to staff who cannot report for duty after
being confirmed by a medical officer or a medical board or a panel doctor as
unfit for carrying out his/her duty
Maternity leave - Maternity leave is a benefit given to female staff for maximum
300 days inclusive of weekends and public holidays. Staff is given flexibility to
choose within 60 days to 90 days maternity leave.
Leave on half-pay - Half-pay leave is a benefit given to staff for reasons of
health of nearest family members. This leave cannot exceed 14 days in any year.
Leave for special medical duty - Staff who carry out specific medical duties can
be given Special Medical Duty Leave amounting to 14 days at any time.

```

### **Function 8: Feedback and Comments function**

The feedback and comments function in the HR software serves as a platform for employees to provide general feedback regarding the company. Employees can also use the platform to inform HR about problems or areas of concern identified in the workplace. The information provided by the employees will be confidential and non-accessible by other employees. Only HR personnel with access to the database will be able to view the comments provided.

To begin the process, employees simply have to run the HR programme and enter the number 8. Upon accessing the function, can choose to remain anonymous by inputting Yes or Y (not case sensitive). Next, employees simply have to key in the feedback topic and provide details and comments relating to the topic. There is no pre-specified topics provided by the HR programme, as such, employees will be able to provide feedback on a wide range of topics.

```

depending on company's performance
Input: 8

Do you wish to remain anonymous? Please enter 'Yes' or 'Y' or 'No' or 'N': Yes

Please enter the feedback you have for the company: More chairs

Please provide a suggestion for improvement: buy more chairs

```

If they choose No or N (Non-case sensitive), employees must key in their employee ID provided during the onboarding process for tracking purposes. The programme will run the feedback questions similar to the anonymous function.

```

Input: 8

Do you wish to remain anonymous? Please enter 'Yes' or 'Y' or 'No' or 'N': n

Please enter your employee ID: P1LV2LUJ

Please enter the feedback you have for the company: Salary increase

Please provide a suggestion for improvement: more bonus

```



Please enter the topic of your feedback: **Salary Adjustments** → Step 3: Enter feedback topic

Please **enter the comments** that you have regarding this feedback: Salary adjustments have not been sufficient to help us cope with the recent inflation → Step 4: Provide details and comments

Once the feedback is entered, the programme will end, and the data will be stored in the database named “Feedback”. If employee wishes to remain anonymous, the employee ID will reflect “Anonymous” as Y/Yes was chosen in the anonymity option. Otherwise, his/her employee ID will be reflected if N/No was selected. This database will only be accessible to the HR team manually. Upon looking at the information provided, they can proceed to identify the employee involved through the employee ID provided and a follow-up will be conducted through e-mail. This function aims to help improve the work environment and address any concerns that employees may have about the company or their work.

Employee ID	feedbackTopic	feedbackComments
Q76Q19UR	salary	too low
P1LV2LUJ	Salary Adjustments	Salary adjustments have not been sufficient to help us cope with the recent inflation

### **Function 9: Leave and Claim Status**

Function 9 serves as an extension to function 5. Upon successfully application, employees can review the status of their leave and claim through this function. To begin the process, employees simply have to run the HR programme and enter the number 9. Upon accessing the function, employees will be required to key in their employee ID. Once done, they will be able to review the status of their existing claim and leave for presence of any leave or claim. The leave status will be shown first, followed by the claim status. Afterwards, the programme will return to the default page which displays the user menu for all 10 functions.

10)To declare the amount of sales you made or check if you are eligible for bonus depending on company's performance

Input: 9 → Step 1: Run the programme and key in “9”.

Please enter the employee ID that you would like to view: **P1LV2LUJ** → Step 2: Key in Employee ID.

Employee ['P1LV2LUJ'] has requested for a leave of 1 day(s) starting from 1992-08-20 00:00:00 for "Sick" reasons. **The request status is: Approved** → Leave Status

Employee ['P1LV2LUJ'] has request for a claim of 1500 for "Housing" reasons. The status of **this request is: Pending** → Claim Status

Welcome to our employee management system. To proceed, please select between 1-10: → Programme returns to the main menu

### **Function 10: Sales commission/Employee Bonus**

Function 10 provides employees with information relating to commission and bonuses. In this case, TechGiant provides its sales employees with a 5% sales commission calculated based on the amount of sales generated whereas other employees are entitled to a bonus based on company performance measured by overall revenue. To begin the process, employees simply have to run the HR programme and enter the number 10. Afterwards, employees will be required to key in their employee ID. Once the ID is keyed in, the programme will retrieve the employee's job grade that is stored in the database named "EmployeeSales". If the job grade is 1 or 3 (meaning sales positions), a message will appear, requesting for the sales figure achieved for the current month.

```
10)To declare the amount of sales you made or check if you are eligible for
bonus depending on company's performance
Input: 10 → Step 1: Run the programme and key in "10".

Please enter your employeeID: P1LV2LUJ → Step 2: Key in Employee ID.

You are part of the sales, so you will earn comission based on your sales
Please enter the sales that you have achieved this month: 20000 → Step 3: Key in
You have made a comission of 1000.00 → Commission earned Sales Figure
```

For non-sales employees (job grade 2 & 4), a separate message will appear once the Employee ID is entered. Bonuses are calculated based on the company's total revenue, which is defined in the programme and can be adjusted where needed. In general, a 0.05% bonus will be awarded to all non-sales employees when revenue reaches or exceeds \$1 million. The programme will thus inform employees on whether the company has achieved the monthly quota and the amount of bonus to be received. The program has been set to define revenue as \$1 million by default, this amount can be adjusted based on the actual performance.

```
Input: 10 → Step 1: Run the programme and key in "10".

Please enter your employeeID: WDLGOXKF → Step 2: Key in Employee ID.
The company has successfully reached their quota. You have made a bonus of 500.0
Bonus Earned
```