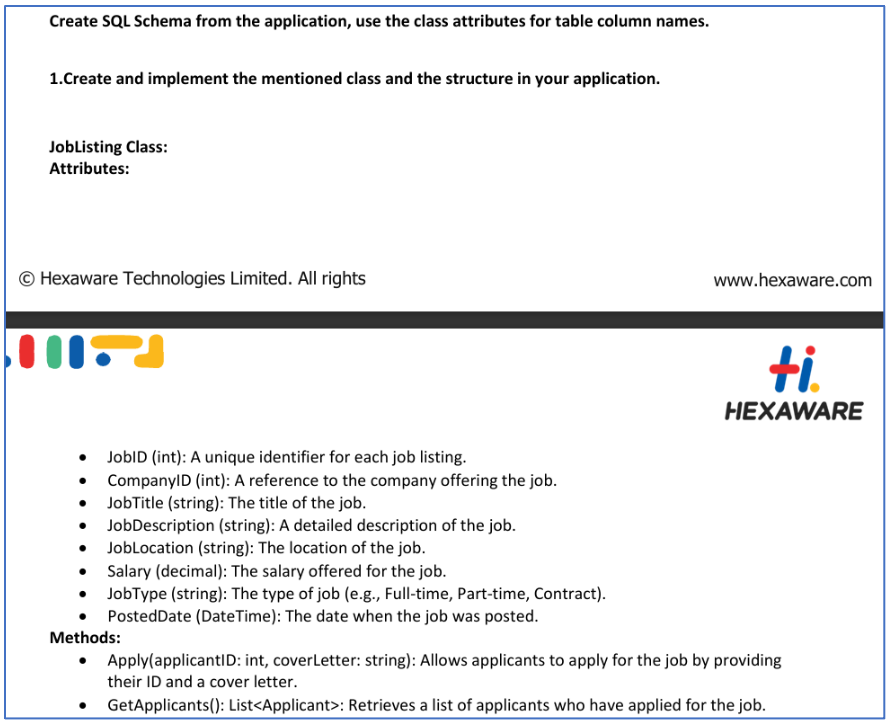
Python-Coding Challenge-CarrerHub



Create SQL Schema from the application, use the class attributes for table column names.

1.Create and implement the mentioned class and the structure in your application.

JobListing Class:
Attributes:

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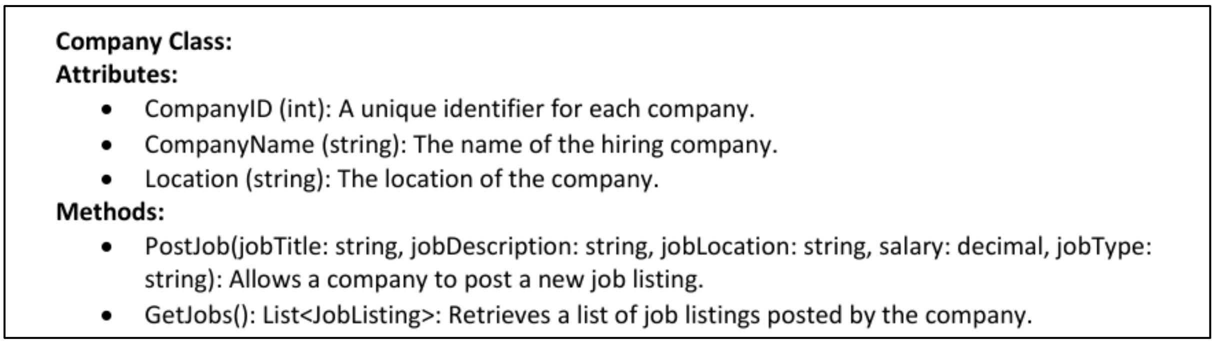
- JobID (int): A unique identifier for each job listing.
- CompanyID (int): A reference to the company offering the job.
- JobTitle (string): The title of the job.
- JobDescription (string): A detailed description of the job.
- JobLocation (string): The location of the job.
- Salary (decimal): The salary offered for the job.
- JobType (string): The type of job (e.g., Full-time, Part-time, Contract).
- PostedDate (DateTime): The date when the job was posted.

Methods:

- Apply(applicantID: int, coverLetter: string): Allows applicants to apply for the job by providing their ID and a cover letter.
- GetApplicants(): List<Applicant>: Retrieves a list of applicants who have applied for the job.

CODE:

```
from entity.Jobapplication import jobapplication
from datetime import datetime

class Joblistings:
    def
__init__(self,job_id,company_id,job_title,job_description,job_location,salary,job_type,posted_date):
        self.job_id = job_id
        self.company_id = company_id
        self.job_title = job_title
        self.job_description = job_description
        self.job_location = job_location
        self.salary = salary
        self.job_type = job_type
        self.posted_date = posted_date

    def Apply(self, db, applicant_id, cover_letter):
        application = jobapplication(None, self.job_id, applicant_id, datetime.now(), cover_letter)
        db.insert_job_application(application)

    def GetApplicants(self, db):
        return db.GetApplicationsForJob(self.job_id)
```


Company Class:
Attributes:

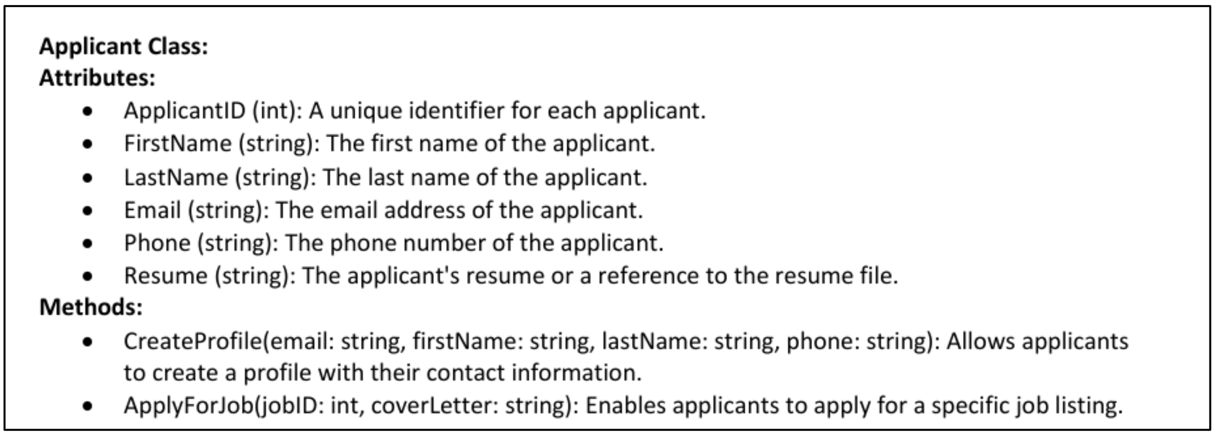
- CompanyID (int): A unique identifier for each company.
- CompanyName (string): The name of the hiring company.
- Location (string): The location of the company.

Methods:

- PostJob(jobTitle: string, jobDescription: string, jobLocation: string, salary: decimal, jobType: string): Allows a company to post a new job listing.
- GetJobs(): List<JobListing>: Retrieves a list of job listings posted by the company.

CODE:

```
from entity.Joblistings import Joblistings
from datetime import datetime
class company:
    def __init__(self,company_id,company_name,location):
        self.company_id = company_id
        self.company_name = company_name
        self.location = location

    def post_job(self,db,job_title,job_description,job_location,salary,job_type):
        job = Joblistings(None,self.company_id,job_title,job_description,job_location,salary,job_type,datetime.now())
        db.insert_joblisting(job)

    def get_job(self, db):
        return db.GetJobsByCompany(self.company_id)
```


Applicant Class:
Attributes:

- ApplicantID (int): A unique identifier for each applicant.
- FirstName (string): The first name of the applicant.
- LastName (string): The last name of the applicant.
- Email (string): The email address of the applicant.
- Phone (string): The phone number of the applicant.
- Resume (string): The applicant's resume or a reference to the resume file.

Methods:

- CreateProfile(email: string, firstName: string, lastName: string, phone: string): Allows applicants to create a profile with their contact information.
- ApplyForJob(jobID: int, coverLetter: string): Enables applicants to apply for a specific job listing.

CODE:

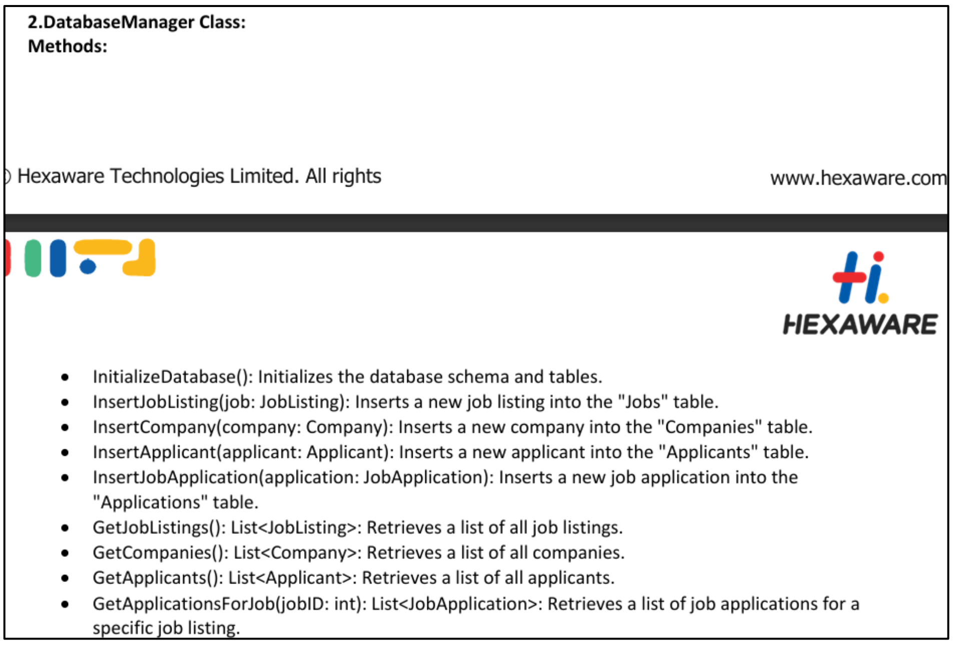
```
from entity.Jobapplication import jobapplication
from datetime import datetime

class applicant:
    def __init__(self,applicant_id,first_name,last_name,email,phone_number,resume):
        self.applicant_id = applicant_id
        self.first_name = first_name
        self.last_name = last_name
        self.email = email
        self.phone_number = phone_number
        self.resume = resume

    def create_profile(self, db):
        if "@" not in self.email or "." not in self.email.split("@")[-1]:
            raise ValueError("Invalid email format")
        db.insert_applicant(self)

    def apply_for_a_job(self, db, job_id, coverLetter):
        job_application = jobapplication(None, job_id, self.applicant_id, datetime.now(), coverLetter)
        db.insert_job_application(job_application)
```

JobApplication Class:
Attributes:

- ApplicationID (int): A unique identifier for each job application.
- JobID (int): A reference to the job listing.
- ApplicantID (int): A reference to the applicant.
- ApplicationDate (DateTime): The date and time when the application was submitted.
- CoverLetter (string): The cover letter submitted with the application.

CODE:

```
class jobapplication:
    def __init__(self,application_id,job_id,applicant_id,application_date,coverLetter):
        self.application_id = application_id
        self.job_id = job_id
        self.applicant_id = applicant_id
        self.application_date = application_date
        self.coverLetter = coverLetter
```


2.DatabaseManager Class:
Methods:

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HEXAWARE

- InitializeDatabase(): Initializes the database schema and tables.
- InsertJobListing(job: JobListing): Inserts a new job listing into the "Jobs" table.
- InsertCompany(company: Company): Inserts a new company into the "Companies" table.
- InsertApplicant(applicant: Applicant): Inserts a new applicant into the "Applicants" table.
- InsertJobApplication(application: JobApplication): Inserts a new job application into the "Applications" table.
- GetJobListings(): List<JobListing>: Retrieves a list of all job listings.
- GetCompanies(): List<Company>: Retrieves a list of all companies.
- GetApplicants(): List<Applicant>: Retrieves a list of all applicants.
- GetApplicationsForJob(jobID: int): List<JobApplication>: Retrieves a list of job applications for a specific job listing.

CODE:

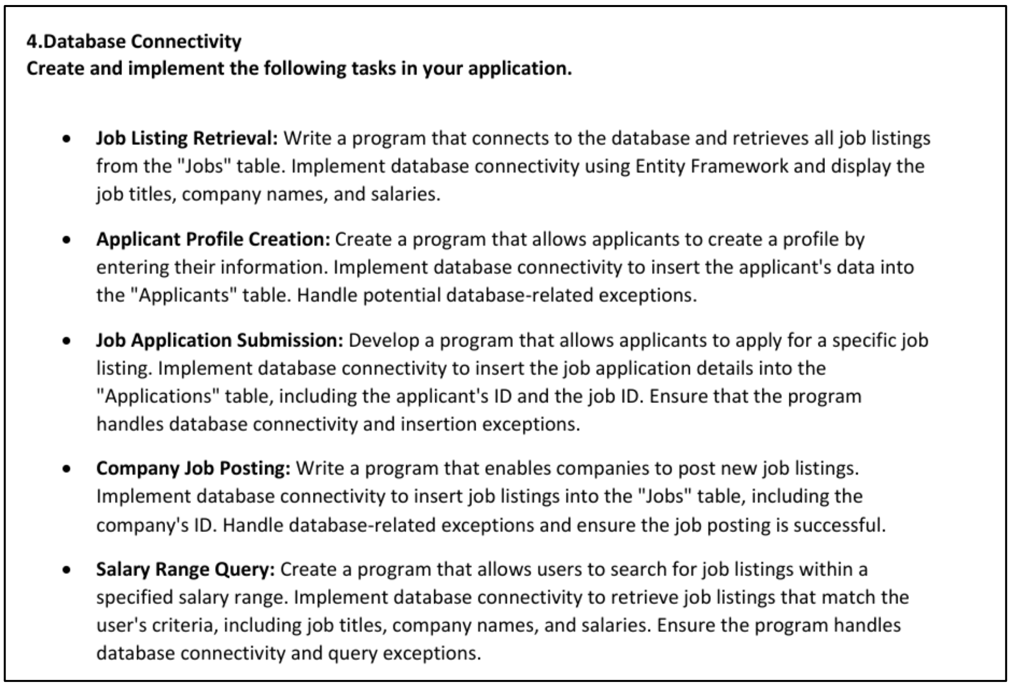
```
import mysql.connector
from mysql.connector import Error



class Databasemanager:

    def __init__(self):
        try:
            self.con = mysql.connector.connect(
                host = 'localhost',
                user = 'root',
                password = 'Zuhi743#',
                database = 'careerhub'
            )
            self.cursor = self.con.cursor(dictionary=True)
        except Error as e:
            print(f"Database connection error:{e}")

    def insert_company(self,company):
        try:
            self.cursor.execute("insert into company(company_id,company_name,location) values
(%s,%s,%s)",
                                (company.company_id,company.company_name,company.location))
            self.con.commit()
        except Error as e:
            print(f"Error inserting company:{e}")
    def insert_joblisting(self,Joblistings):
        try:
            if Joblistings.salary < 0:
                raise ValueError("Salary cannot be negative")
            self.cursor.execute(
                        """
                        insert into joblistings(company_id,job_title,
                        job_description,job_location,salary,job_type,posted_date)
                        values(%s,%s,%s,%s,%s,%s,%s)

""",(Joblistings.company_id,Joblistings.job_title,Joblistings.job_description,Joblistings.job_location,J
oblistings.salary,Joblistings.job_type,Joblistings.posted_date))
            self.con.commit()
        except Error as e:
            print(f"Error inserting job:{e}")

    def insert_applicant(self,applicant):
        try:
            self.cursor.execute(
                    """
            insert into applicant(applicant_id,first_name,last_name,email,phone_number,resume)
            values(%s,%s,%s,%s,%s,%s)""",
(applicant.applicant_id,applicant.first_name,applicant.last_name,
                                        applicant.email,
                                        applicant.phone_number,applicant.resume))
            self.con.commit()
        except Error as e:
            print(f"Error inserting applicant:{e}")

    def insert_jobapplication(self,jobapplication):
        try:
            self.cursor.execute(
                """
                insert into jobapplication(job_id,applicant_id,application_date,coverletter)
                values(%s,%s,%s,%s)

""",(jobapplication.job_id,jobapplication.applicant_id,jobapplication.application_date,jobapplication.c
overletter))
            self.con.commit()
        except Error as e:
            print(f"Error inserting application:{e}")

    def get_job_listings(self):
        self.cursor.execute(
            """
            select j.job_title,c.company_name,j.job_id,
            j.salary,j.job_type,c.location,j.job_description
            from joblistings j
            join company c on
            j.company_id = c.company_id
            """)
        return self.cursor.fetchall()

    def get_applicants(self):
        self.cursor.execute("select*from applicant")
        return self.cursor.fetchall()

    def get_companies(self):
        self.cursor.execute("select*from company")
        self.cursor.fetchall()

    def get_applicants_for_job(self,job_id):
        self.cursor.execute("select*from joblistings where job_id = %s",(job_id,))
        self.cursor.fetchall()

    def salary_range(self,min_salary,max_salary):
        try:
            self.cursor.execute(
                """
                select j.job_title,c.company_name,j.job_id,j.salary
                from joblistings j
                join company c on
                j.company_id = c.company_id
                where j.salary between %s and %s
                 """,(min_salary,max_salary))
            return self.cursor.fetchall()
        except Error as e:
            print(f"Error:{e}")

    def get_company_by_id(self,company_id):
        try:
            cursor = self.con.cursor(dictionary=True)
            cursor.execute("select company_name from company where company_id =
%s",(company_id,))
            result = cursor.fetchone()
            return result['company_name'] if result else None
        except Exception as e:
            print("Error:{e}")
            return None

    def get_applicant_name_byid(self,applicant_id):
        try:
            cursor=self.con.cursor(dictionary=True)
            cursor.execute("select first_name,last_name from applicant where applicant_id = %s",
                   (applicant_id,))
            result = cursor.fetchone()
            return (result['first_name'],result['last_name'])if result else None
        except Exception as e:
            print("Error:{e}")
            return None
```

Main function:

```
from entity.Applicant import applicant

from entity.Company import company

from entity.databasemanager import Databasemanager

def main():
    db = Databasemanager()
    print("Welcome to CareerHub")

    while True:
        print("Select an option:")
        print("1.Register a company")
        print("2.Post a job")
        print("3.Register an applicant")
        print("4.Upload Resume")
        print("5.Apply for a job")
        print("6.View all job listings")
        print("7.Search job by salary range")
        print("8.Exit")

        choice = int(input("Enter your choice(1-8):"))

        try:
            if choice == 1:
                print("Register Company")
                company_id = int(input("Enter company_id:"))
                company_name = input("Enter your company name:")
                location = input("Enter your company location:")
                data = company(company_id,company_name,location)
                db.insert_company(data)
                print("Company registered successfully")

            elif choice == 2:
                print("Post a job")
                company_id = int(input("Enter Company ID:"))
                company_name = db.get_company_by_id(company_id)
                if not company_name:
                    print("Company not found")
                    continue
                job_title = input("Enter job title:")
                job_desc = input("Enter job description:")
                job_location = input("Enter job location:")
                salary = float(input("Enter Salary:"))
                job_type = input("Enter job type(Full-time/Part-time/Contract):")
                data = company(company_id,company_name,"")
                data.post_job(db,job_title,job_desc,job_location,salary,job_type)
                print("Job posted successfully")
```

```
elif choice == 3:
    print("Register Applicant")
    applicant_id = int(input("Enter Applicant ID:"))
    first_name = input("Enter First name:")
    last_name = input("Enter Last name:")
    email = input("Enter Email:")
    phone_number = input("Enter Phone number:")
    resume = input("Enter resume file name - (.pdf) format:")
    app = applicant(applicant_id,first_name,last_name,email,phone_number,resume)
    app.create_profile(db)
    print("Applicant profile created")

elif choice == 4:
    print("Upload Resume")
    resume_pdf = input("Enter Resume file name-(.pdf) format:")
    upload_resume(resume_pdf)
    print("Resume uploaded Successfully")

elif choice == 5:
    print("Apply for a job")
    applicant_id = int(input("Enter your applicant ID:"))
    job_id = int(input("Enter Job ID to apply:"))
    cover_letter = input("Enter cover letter:")
    applicant_name = db.get_applicant_name_byid(applicant_id)
    if not applicant_name:
        print("Application not found")
        continue
    resume = "resume.pdf"
    app = applicant(applicant_id,applicant_name[0],applicant_name[1],"","",resume)
    app.apply_for_a_job(db,job_id,"")
    print("Application submitted")

elif choice == 6:
    print("Job Listings")
    jobs = db.get_job_listings()
    if not jobs:
        print("No jobs available")
    for j in jobs:
        print(f"{j['job_id']}:{j['job_title']}-{j['company_name']}|{j['job_type']}|{j['salary']}|"
              f"{j['location']}")

elif choice == 7:
    print("Search jobs by salary range")
    min_salary = float(input("Enter minimum salary:"))
    max_salary = float(input("Enter maximum salary:"))
    jobs = db.salary_range(min_salary,max_salary)
    if not jobs:
        print("No jobs found in the above range")
    for j in jobs:
        print(f"{j['job_id']}:{j['job_title']},{j['company_name']},{j['salary']}")
```

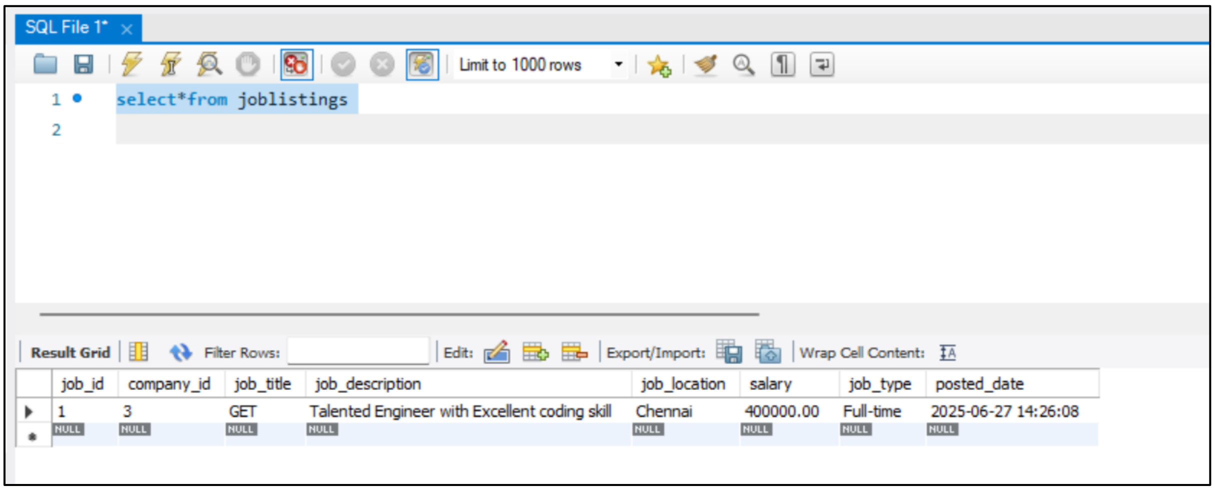
```
            elif choice == 8:
                print("Thank you for using Careerhub,Have a bright Future!")
                break;
            else:
                print("Invalid choice,enter number btw 1-8")

        except ValueError as e:
            print(f"Error:{e}")
        except FileNotFoundError as f:
            print(f"Error:{f}")
        except Exception as e:
            print(f"Unexpected Error:{e}")

if __name__ == "__main__":
    main()
```



4.Database Connectivity
Create and implement the following tasks in your application.

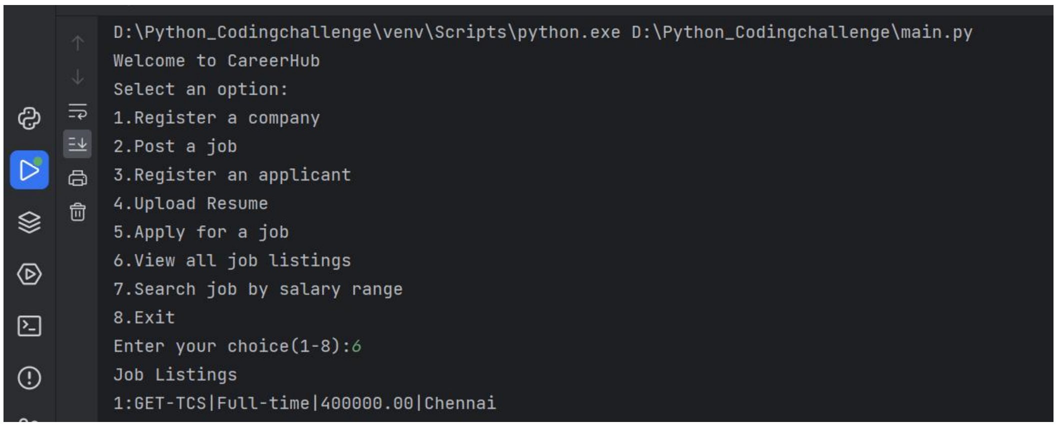
- **Job Listing Retrieval:** Write a program that connects to the database and retrieves all job listings from the "Jobs" table. Implement database connectivity using Entity Framework and display the job titles, company names, and salaries.
- **Applicant Profile Creation:** Create a program that allows applicants to create a profile by entering their information. Implement database connectivity to insert the applicant's data into the "Applicants" table. Handle potential database-related exceptions.
- **Job Application Submission:** Develop a program that allows applicants to apply for a specific job listing. Implement database connectivity to insert the job application details into the "Applications" table, including the applicant's ID and the job ID. Ensure that the program handles database connectivity and insertion exceptions.
- **Company Job Posting:** Write a program that enables companies to post new job listings. Implement database connectivity to insert job listings into the "Jobs" table, including the company's ID. Handle database-related exceptions and ensure the job posting is successful.
- **Salary Range Query:** Create a program that allows users to search for job listings within a specified salary range. Implement database connectivity to retrieve job listings that match the user's criteria, including job titles, company names, and salaries. Ensure the program handles database connectivity and query exceptions.

OUTPUT: Joblisting retrieval



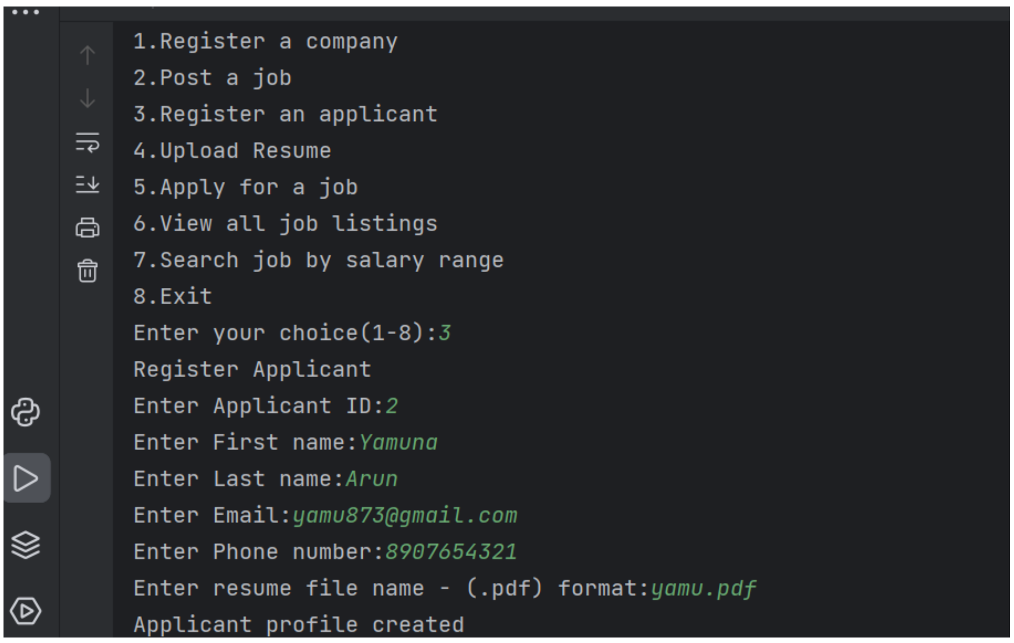
```sql
select*from joblistings
```

job_id	company_id	job_title	job_description	job_location	salary	job_type	posted_date
1	3	GET	Talented Engineer with Excellent coding skill	Chennai	400000.00	Full-time	2025-06-27 14:26:08
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

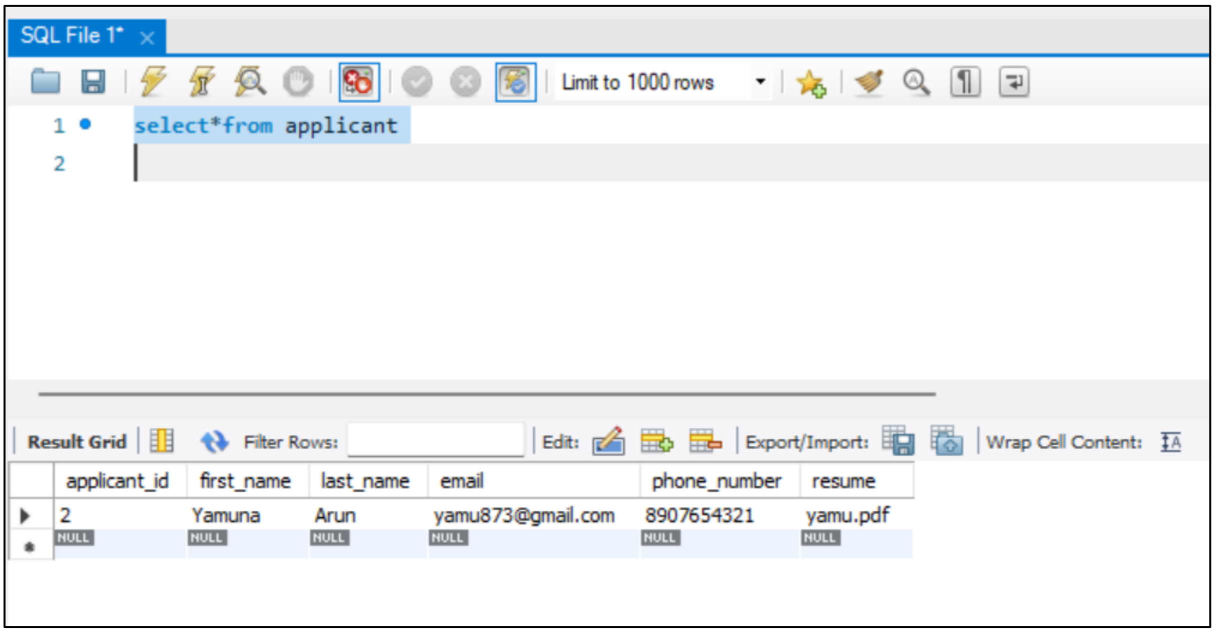


```
D:\Python_Codingchallenge\venv\Scripts\python.exe D:\Python_Codingchallenge\main.py
Welcome to CareerHub
Select an option:
1.Register a company
2.Post a job
3.Register an applicant
4.Upload Resume
5.Apply for a job
6.View all job listings
7.Search job by salary range
8.Exit
Enter your choice(1-8):6
Job Listings
1:GET-TCS|Full-time|400000.00|Chennai
```

Applicant profile creation:



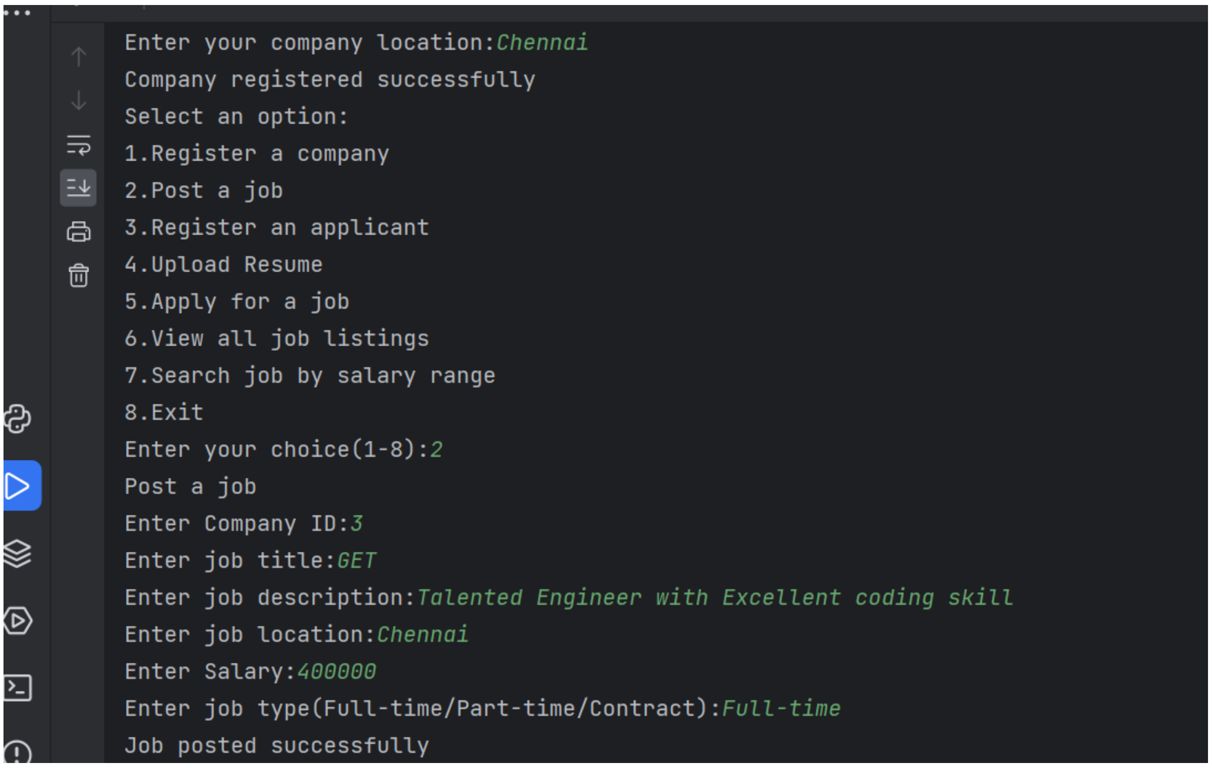
```
1.Register a company
2.Post a job
3.Register an applicant
4.Upload Resume
5.Apply for a job
6.View all job listings
7.Search job by salary range
8.Exit
Enter your choice(1-8):3
Register Applicant
Enter Applicant ID:2
Enter First name:Yamuna
Enter Last name:Arun
Enter Email:yamu873@gmail.com
Enter Phone number:8907654321
Enter resume file name - (.pdf) format:yamu.pdf
Applicant profile created
```



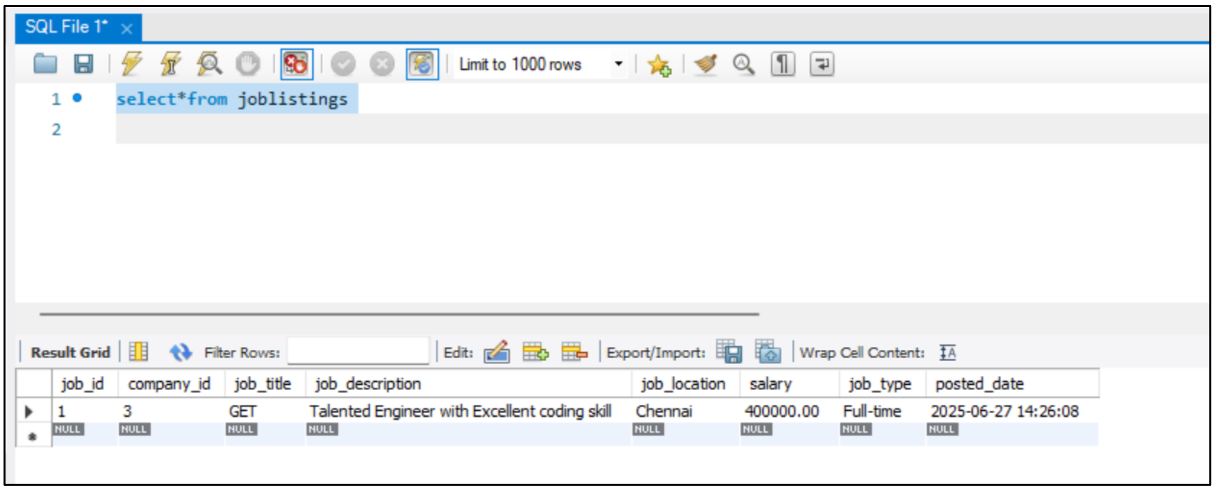
```
select*from applicant
```

applicant_id	first_name	last_name	email	phone_number	resume
2	Yamuna	Arun	yamu873@gmail.com	8907654321	yamu.pdf
NULL	NULL	NULL	NULL	NULL	NULL

Company job posting:



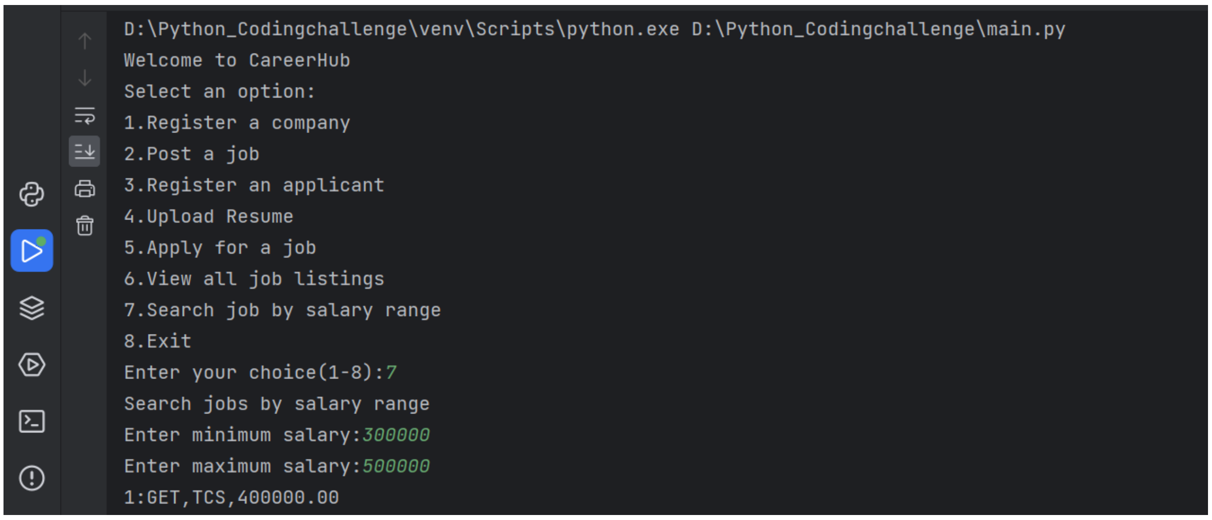
```
Enter your company location:Chennai
Company registered successfully
Select an option:
1.Register a company
2.Post a job
3.Register an applicant
4.Upload Resume
5.Apply for a job
6.View all job listings
7.Search job by salary range
8.Exit
Enter your choice(1-8):2
Post a job
Enter Company ID:3
Enter job title:GET
Enter job description:Talented Engineer with Excellent coding skill
Enter job location:Chennai
Enter Salary:400000
Enter job type(Full-time/Part-time/Contract):Full-time
Job posted successfully
```



```
select*from joblistings
```

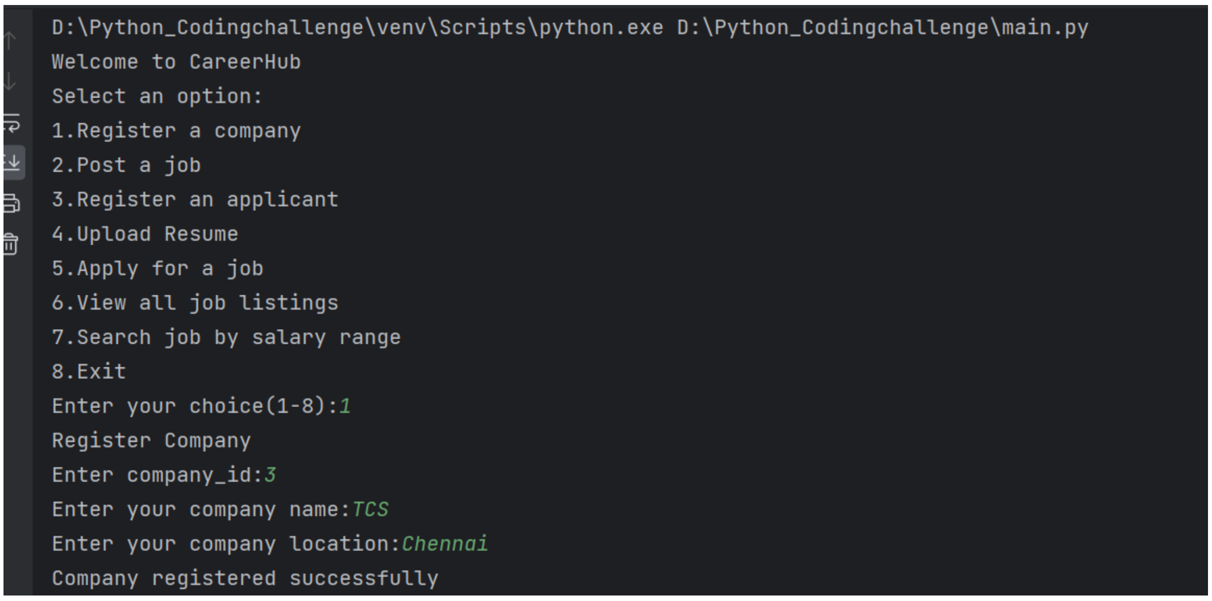
job_id	company_id	job_title	job_description	job_location	salary	job_type	posted_date
1	3	GET	Talented Engineer with Excellent coding skill	Chennai	400000.00	Full-time	2025-06-27 14:26:08
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Salary range:

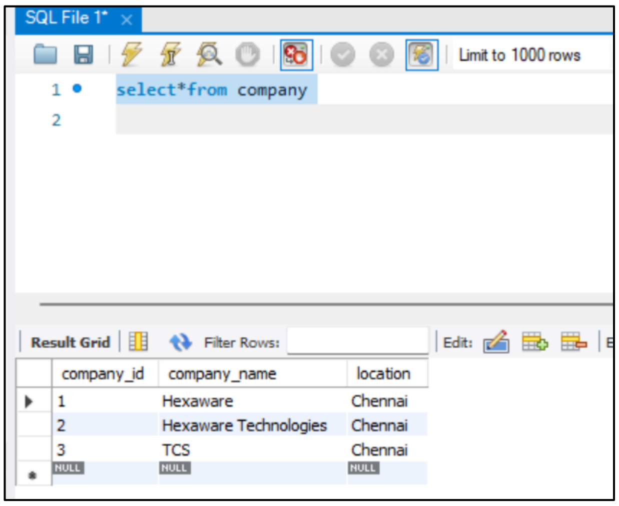


```
D:\Python_Codingchallenge\venv\Scripts\python.exe D:\Python_Codingchallenge\main.py
Welcome to CareerHub
Select an option:
1.Register a company
2.Post a job
3.Register an applicant
4.Upload Resume
5.Apply for a job
6.View all job listings
7.Search job by salary range
8.Exit
Enter your choice(1-8):7
Search jobs by salary range
Enter minimum salary:300000
Enter maximum salary:500000
1:GET,TCS,400000.00
```

Registering a company:



```
D:\Python_Codingchallenge\venv\Scripts\python.exe D:\Python_Codingchallenge\main.py
Welcome to CareerHub
Select an option:
1.Register a company
2.Post a job
3.Register an applicant
4.Upload Resume
5.Apply for a job
6.View all job listings
7.Search job by salary range
8.Exit
Enter your choice(1-8):1
Register Company
Enter company_id:3
Enter your company name:TCS
Enter your company location:Chennai
Company registered successfully
```



```
select*from company
```

company_id	company_name	location
1	Hexaware	Chennai
2	Hexaware Technologies	Chennai
3	TCS	Chennai
NULL	NULL	NULL