In [64]:
```
import pandas as pd
import numpy as np
import mysql.connector as mysql
from mysql.connector import Error
```

In [17]:
```
try:
    conn = mysql.connect(host='127.0.0.1', user='root',
                         password='root', buffered=True)#give ur username, password
    if conn.is_connected():
        cursor = conn.cursor()
        cursor.execute("USE MIGRATION")
except Error as e:
    print("Error while connecting to MySQL", e)
```

Number of employees hired for each job and department in 2021 divided by quarter. The table must be ordered alphabetically by department and job.

```
 select
D.department,
J.job,
sum(case when Quarter='Q1' then count else 0 end) as Q1,
sum(case when Quarter='Q2' then count else 0 end) as Q2,
sum(case when Quarter='Q3' then count else 0 end) as Q3,
sum(case when Quarter='Q4' then count else 0 end) as Q4
from (
select department_id, job_id, concat('Q',quarter(datetime) ) as Quarter,
count(*) as count
from hired_employees
where datetime = 2021
group by  department_id, job_id, quarter(datetime)
) A
inner join jobs J
on J.id = A.job_id
inner join departments D
on D.id = A.department_id
group by D.department, J.job
order by D.department asc, J.job asc
```

In [63]:
```
Query1 = ("select "
            "D.department,"
            "J.job,"
            "sum(case when Quarter='Q1' then count else 0 end) as Q1,"
            "sum(case when Quarter='Q2' then count else 0 end) as Q2,"
            "sum(case when Quarter='Q3' then count else 0 end) as Q3,"
            "sum(case when Quarter='Q4' then count else 0 end) as Q4 "
            "from ("
```

```
            "select department_id, job_id, concat('Q',quarter(datetime) ) as Quarter, c
            "from hired_employees "
            "where datetime = 2021 "
            "group by  department_id, job_id, quarter(datetime) "
            ") A "
            "inner join jobs J "
            "on J.id = A.job_id "
            "inner join departments D "
            "on D.id = A.department_id "
            "group by D.department, J.job "
            "order by D.department asc, J.job asc ")

df1 = pd.read_sql(Query1, conn)
display(df1)
```

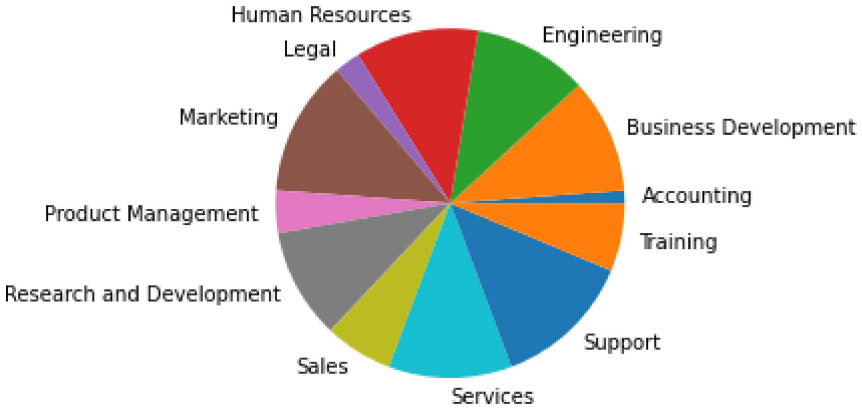
	department	job	Q1	Q2	Q3	Q4
0	Accounting	Account Representative IV	1.0	0.0	0.0	0.0
1	Accounting	Actuary	0.0	1.0	0.0	0.0
2	Accounting	Analyst Programmer	0.0	0.0	1.0	0.0
3	Accounting	Budget/Accounting Analyst III	0.0	1.0	0.0	0.0
4	Accounting	Cost Accountant	0.0	1.0	0.0	0.0
...	...	...	...	...	...	...
933	Training	Teacher	0.0	2.0	0.0	0.0
934	Training	Technical Writer	0.0	0.0	1.0	0.0
935	Training	VP Product Management	1.0	0.0	0.0	0.0
936	Training	VP Quality Control	0.0	1.0	0.0	0.0
937	Training	Web Developer III	0.0	1.0	0.0	0.0

938 rows × 6 columns

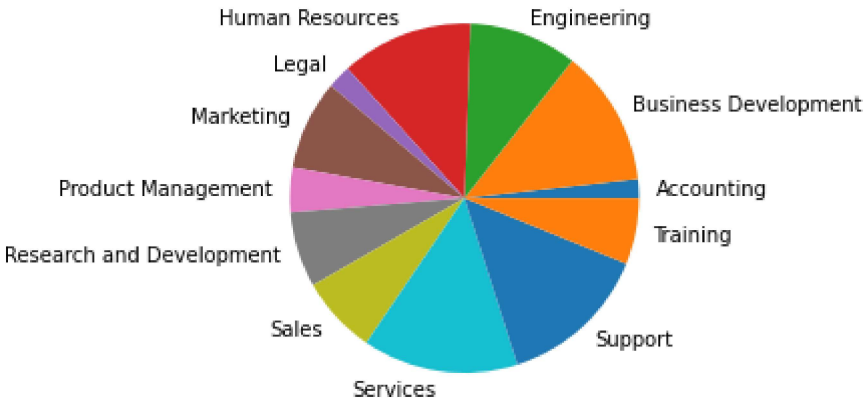
In [73]:

```
pieQ1 = df1.groupby(['department']).sum().plot(kind='pie', y='Q1',title='Q1',legend = F
pieQ2 = df1.groupby(['department']).sum().plot(kind='pie', y='Q2',title='Q2',legend = F
pieQ3 = df1.groupby(['department']).sum().plot(kind='pie', y='Q3',title='Q3',legend = F
pieQ4 = df1.groupby(['department']).sum().plot(kind='pie', y='Q4',title='Q4',legend = F
```

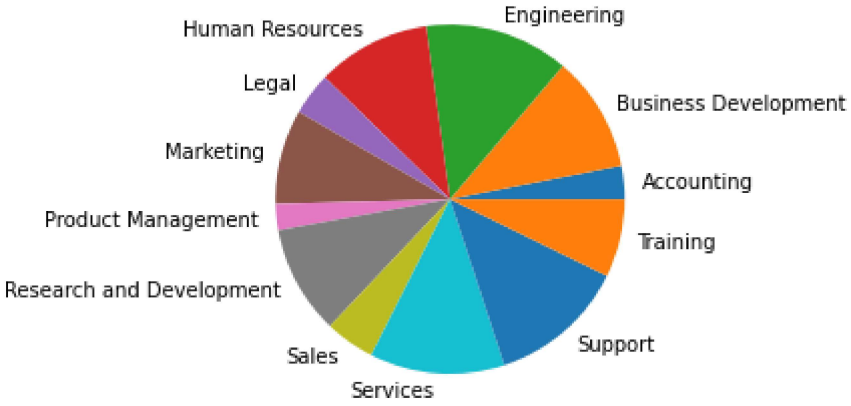
Q1

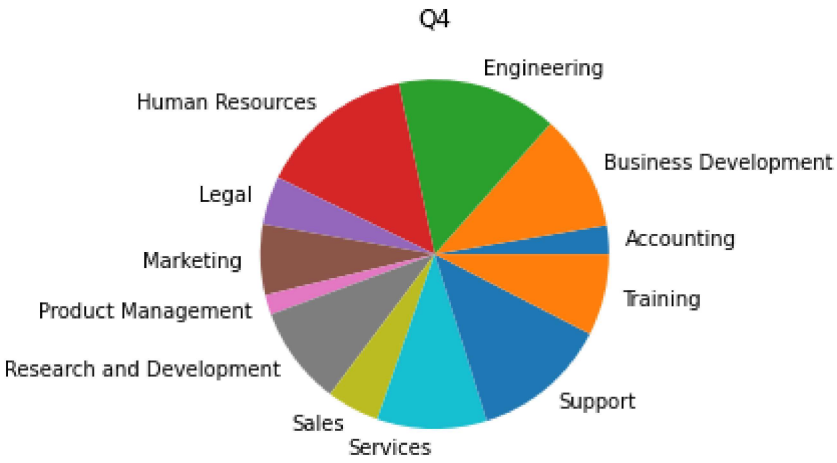

Human Resources
Engineering
Legal
Business Development
Marketing
Accounting
Product Management
Training
Research and Development
Support
Sales
Services

Q2


Human Resources
Engineering
Legal
Business Development
Marketing
Accounting
Product Management
Training
Research and Development
Support
Sales
Services

Q3


Engineering
Human Resources
Legal
Business Development
Marketing
Accounting
Product Management
Training
Research and Development
Support
Sales
Services



List of ids, name and number of employees hired of each department that hired more employees than the mean of employees hired in 2021 for all the departments, ordered by the number of employees hired (descending)

```
 select H.department_id as ID, D.department as DEPARTMENT, count(*) as HIRED
from hired_employees H
inner join departments D
on D.id = H.department_id
group by H.department_id , D.department
having HIRED > (
select avg(count) as avg from (
select department_id,  count(*) as count
from hired_employees
where datetime = 2021
group by department_id) L )
order by HIRED desc
```

In [44]:

```
Query2 = ("select H.department_id as ID, D.department as DEPARTMENT, count(*) as HIRED"
          "  from hired_employees H"
          "  inner join departments D"
          "  on D.id = H.department_id"
          "  group by H.department_id , D.department"
          "  having HIRED > ("
          "  select avg(count) as avg from ("
          "  select department_id,  count(*) as count"
          "  from hired_employees "
          "  where datetime = 2021 "
          "  group by department_id) L ) "
          "  order by HIRED desc ")

df2 = pd.read_sql(Query2, conn)
display(df2)
```

	ID	DEPARTMENT	HIRED
0	8	Support	256

	ID	DEPARTMENT	HIRED
1	6	Human Resources	249
2	5	Engineering	245
3	7	Services	240
4	4	Business Development	222
5	3	Research and Development	178
6	9	Marketing	166
7	10	Training	141

In [46]:
```
ax = df2.plot.bar(x='DEPARTMENT', y='HIRED')
```