Class 12

Answer Key

Informatics Practices

Focus on Documentation

1. Data Handling using Pandas

Coding task (Page no. 5)

```
import pandas as pd
```

1. Creating the empNames and empSalary series

```
empNames_data = {'E001': 'Raman', 'E002': 'Sukhvir', 'E003': 'Saumya', 'E004': 'Rittik', 'E005': 'Arya', 'E006': 'Pankaj', 'E007': 'Samarth'}

empNames = pd.Series(empNames_data, name='empNames', dtype='object')

empSalary_data = {'E001': 75000, 'E002': 95000, 'E003': 50000, 'E004': 80000, 'E005': 55000, 'E006': 80000, 'E007': 45000}

empSalary = pd.Series(empSalary_data, name='empSalary', dtype='int64')
```

2. Retrieve the value and index part of empNames and empSalary

```
empNames_values = empNames.values

empNames_index = empNames.index

empSalary_values = empSalary.values

empSalary_index = empSalary.index
```

3. Retrieve the name of the first employee

```
first_employee_name = empNames.iloc[0]
```

4. Retrieve the names of the last three employees from empNames

```
last_three_employees_names = empNames.iloc[-3:]
```

5. Retrieve the salary of employees with code E001, E003, and E004

```
selected_employee_salaries = empSalary.loc[['E001', 'E003', 'E004']]
# Displaying the results
print("empNames Values:", empNames_values)
print("empNames Indices:", empNames_index)
print("\nempSalary Values:", empSalary_values)
print("empSalary Indices:", empSalary_index)
print("\nName of the First Employee:", first_employee_name)
print("\nNames of Last Three Employees:")
print(last_three_employees_names)
print("\nSalary of Employees E001, E003, and E004:")
print(selected_employee_salaries)
```

Coding task (Page no. 6)

```
import pandas as pd

# Assuming empNames and empSalary are already created as per the previous examples

empNames_data = {'E001': 'Raman', 'E002': 'Sukhvir', 'E003': 'Saumya', 'E004': 'Rittik', 'E005': 'Arya', 'E006': 'Pankaj', 'E007': 'Samarth'}

empNames = pd.Series(empNames_data, name='empNames', dtype='object')


empSalary_data = {'E001': 75000, 'E002': 95000, 'E003': 50000, 'E004': 80000, 'E005': 55000, 'E006': '80000', 'E007': 45000}
```

```
empSalary = pd.Series(empSalary_data, name='empSalary', dtype='int64')

# Adding a record for employee Sanyam (E008) with salary 80500
new_employee_id = 'E008'
new_employee_name = 'Sanyam'
new_employee_salary = 80500

# Adding to empNames
empNames[new_employee_id] = new_employee_name

# Adding to empSalary
empSalary[new_employee_id] = new_employee_salary

# Displaying the updated series
print("Updated empNames Series:")
print(empNames)

print("\nUpdated empSalary Series:")
print(empSalary)
```

Coding task (Page no. 8)

```
import pandas as pd

# Assuming empNames and empSalary are already created as per the previous examples
```

```
empNames_data = {'E001': 'Raman', 'E002': 'Sukhvir', 'E003': 'Saumya', 'E004': 'Rittik', 'E005': 'Arya', 'E006': 'Pankaj', 'E007': 'Samarth'}

empNames = pd.Series(empNames_data, name='empNames', dtype='object')


empSalary_data = {'E001': 75000, 'E002': 95000, 'E003': 50000, 'E004': 80000, 'E005': 55000, 'E006': '80000', 'E007': 45000}

empSalary = pd.Series(empSalary_data, name='empSalary', dtype='int64')


# Adding a record for employee Sanyam (E008) with salary 80500

new_employee_id = 'E008'

new_employee_name = 'Sanyam'

new_employee_salary = 80500


# Adding to empNames

empNames[new_employee_id] = new_employee_name


# Adding to empSalary

empSalary[new_employee_id] = new_employee_salary


# Displaying the updated series

print("Updated empNames Series:")

print(empNames)


print("\nUpdated empSalary Series:")

print(empSalary)
```

Coding task (Page no. 9)

```
import pandas as pd
```

```
# Assuming empNames and empSalary are already created as per the previous examples
empNames_data = {'E001': 'Raman', 'E002': 'Sukhvir', 'E003': 'Saumya', 'E004': 'Rittik', 'E005': 'Arya', 'E006': 'Pankaj', 'E007': 'Samarth'}
empNames = pd.Series(empNames_data, name='empNames', dtype='object')

empSalary_data = {'E001': 75000, 'E002': 95000, 'E003': 50000, 'E004': 80000, 'E005': 55000, 'E006': 80000, 'E007': 45000}
empSalary = pd.Series(empSalary_data, name='empSalary', dtype='int64')

# Displaying names and salaries of the first five employees
first_five_employees_names = empNames.iloc[:5]
first_five_employees_salaries = empSalary.iloc[:5]

# Displaying the results
print("Names of First Five Employees:")
print(first_five_employees_names)

print("\nSalaries of First Five Employees:")
print(first_five_employees_salaries)
```

Coding task (Page no. 10)

```
import pandas as pd
# Assuming empNames and empSalary are already created as per the previous examples
empNames_data = {'E001': 'Raman', 'E002': 'Sukhvir', 'E003': 'Saumya', 'E004': 'Rittik', 'E005': 'Arya', 'E006': 'Pankaj', 'E007': 'Samarth'}
empNames = pd.Series(empNames_data, name='empNames', dtype='object')

empSalary_data = {'E001': 75000, 'E002': 95000, 'E003': 50000, 'E004': 80000, 'E005': 55000, 'E006': '80000', 'E007': 45000}
empSalary = pd.Series(empSalary_data, name='empSalary', dtype='int64')

# Providing statistical summary for empSalary
```

```
salary_summary = empSalary.describe()

# Displaying the statistical summary
print("Statistical Summary for empSalary:")
print(salary_summary)

# Note: Since empNames is a series of object dtype (string), describe() won't provide statistical summary like mean, min, etc.
# Instead, we can display unique values and count for empNames.
print("\nUnique Values and Count for empNames:")
print(empNames.value_counts())
```

Coding task (Page no. 12)

1.
```
import pandas as pd

# Assuming empSalary is already created as per the previous examples
empSalary_data = {'E001': 75000, 'E002': 95000, 'E003': 50000, 'E004': 80000, 'E005': 55000, 'E006': 80000, 'E007': 45000}
empSalary = pd.Series(empSalary_data, name='empSalary', dtype='int64')

# Finding the sum total of all salaries
total_salary = empSalary.sum()

# Displaying the result
print("Sum total of all salaries:", total_salary)
```

2.
```
import pandas as pd

# Assuming empSalary is already created as per the previous examples
empSalary_data = {'E001': 75000, 'E002': 95000, 'E003': 50000, 'E004': 80000, 'E005': 55000, 'E006': 80000, 'E007': 45000}
empSalary = pd.Series(empSalary_data, name='empSalary', dtype='int64')
```

```
# Determining the minimum salary offered to employees
min_salary = empSalary.min()

# Displaying the result
print("Minimum salary offered to employees:", min_salary)
```

3.
```
import pandas as pd

# Assuming empSalary is already created as per the previous examples
empSalary_data = {'E001': 75000, 'E002': 95000, 'E003': 50000, 'E004': 80000, 'E005': 55000, 'E006': 80000, 'E007': 45000}
empSalary = pd.Series(empSalary_data, name='empSalary', dtype='int64')

# Determining the maximum salary offered to employees
max_salary = empSalary.max()

# Displaying the result
print("Maximum salary offered to employees:", max_salary)
```

4.
```
import pandas as pd

# Assuming empSalary is already created as per the previous examples
empSalary_data = {'E001': 75000, 'E002': 95000, 'E003': 50000, 'E004': 80000, 'E005': 55000, 'E006': 80000, 'E007': 45000}
empSalary = pd.Series(empSalary_data, name='empSalary', dtype='int64')

# Determining the average salary offered to employees
average_salary = empSalary.mean()

# Displaying the result
print("Average salary offered to employees:", average_salary)
```

5. import pandas as pd

```
# Assuming empSalary is already created as per the previous examples
empSalary_data = {'E001': 75000, 'E002': 95000, 'E003': 50000, 'E004': 80000, 'E005': 55000, 'E006': 80000, 'E007': 45000}
empSalary = pd.Series(empSalary_data, name='empSalary', dtype='int64')

# Incrementing salary by 500 for all employees
empSalary += 500

# Displaying the updated empSalary series
print("Updated empSalary Series:")
print(empSalary)
```

Coding task (Page no. 13)

1. import pandas as pd

```
# Assuming empSalary is already created as per the previous examples
empSalary_data = {'E001': 75000, 'E002': 95000, 'E003': 50000, 'E004': 80000, 'E005': 55000, 'E006': 80000, 'E007': 45000}
empSalary = pd.Series(empSalary_data, name='empSalary', dtype='int64')

# Retrieving IDs of employees earning more than 50000 salary
high_salary_employees_ids = empSalary[empSalary > 50000].index

# Displaying the result
print("IDs of employees earning more than 50000 salary:", high_salary_employees_ids)
```

2. import pandas as pd

```
# Assuming empNames and empSalary are already created as per the previous examples
```

```
empNames_data = {'E001': 'Raman', 'E002': 'Sukhvir', 'E003': 'Saumya', 'E004': 'Rittik', 'E005': 'Arya', 'E006': 'Pankaj', 'E007': 'Samarth'}
empNames = pd.Series(empNames_data, name='empNames', dtype='object')

empSalary_data = {'E001': 75000, 'E002': 95000, 'E003': 50000, 'E004': 80000, 'E005': 55000, 'E006': '80000', 'E007': 45000}
empSalary = pd.Series(empSalary_data, name='empSalary', dtype='int64')

# Retrieving IDs of employees earning more than 50000 salary
high_salary_employees_ids = empSalary[empSalary > 50000].index

# Retrieving names of employees with salaries more than 50000 using the obtained IDs
high_salary_employees_names = empNames.loc[high_salary_employees_ids]

# Displaying the result
print("Names of employees earning more than 50000 salary:")
print(high_salary_employees_names)
```

Coding task (Page no. 15)

```
import pandas as pd

# Assuming empNames and empSalary are already created as per the previous examples
empNames_data = {'E001': 'Raman', 'E002': 'Sukhvir', 'E003': 'Saumya', 'E004': 'Rittik', 'E005': 'Arya', 'E006': 'Pankaj', 'E007': 'Samarth'}
empNames = pd.Series(empNames_data, name='empNames', dtype='object')

empSalary_data = {'E001': 75000, 'E002': 95000, 'E003': 50000, 'E004': 80000, 'E005': 55000, 'E006': '80000', 'E007': 45000}
empSalary = pd.Series(empSalary_data, name='empSalary', dtype='int64')

# Checking if there exists an employee with ID 'E004'
employee_with_id_E004_exists = 'E004' in empNames.index
```

```
# Displaying the result
print("Does an employee with ID 'E004' exist:", employee_with_id_E004_exists)

import pandas as pd

# Assuming empNames and empSalary are already created as per the previous examples
empNames_data = {'E001': 'Raman', 'E002': 'Sukhvir', 'E003': 'Saumya', 'E004': 'Rittik', 'E005': 'Arya', 'E006': 'Pankaj', 'E007': 'Samarth'}
empNames = pd.Series(empNames_data, name='empNames', dtype='object')

empSalary_data = {'E001': 75000, 'E002': 95000, 'E003': 50000, 'E004': 80000, 'E005': '55000', 'E006': '80000', 'E007': 45000}
empSalary = pd.Series(empSalary_data, name='empSalary', dtype='int64')

# Checking if there exists an employee with ID 'E004' using any()
employee_with_id_E004_exists = any(empNames.index == 'E004')

# Displaying the result
print("Does an employee with ID 'E004' exist:", employee_with_id_E004_exists)
```

Coding task (Page no. 16)

```
import pandas as pd

# Assuming empNames and empSalary are already created as per the previous examples
empNames_data = {'E001': 'Raman', 'E002': 'Sukhvir', 'E003': 'Saumya', 'E004': 'Rittik', 'E005': 'Arya', 'E006': 'Pankaj', 'E007': 'Samarth'}
empNames = pd.Series(empNames_data, name='empNames', dtype='object')

empSalary_data = {'E001': 75000, 'E002': 95000, 'E003': 50000, 'E004': 80000, 'E005': 55000, 'E006': '80000', 'E007': 45000}
```

```
empSalary = pd.Series(empSalary_data, name='empSalary', dtype='int64')

# Checking if any record is missing in empNames
missing_records_in_empNames = empNames.isnull().any()

# Checking if any record is missing in empSalary
missing_records_in_empSalary = empSalary.isnull().any()

# Displaying the results
print("Are there missing records in empNames:", missing_records_in_empNames)
print("Are there missing records in empSalary:", missing_records_in_empSalary)
```