Assignment 2

Q1- Given the snippet code below.

i. Identify the objective function and constraints
ii. Identify the type (Linear or Integer)
iii. Maximize the objective function
iv. Find the optimum values of X and Y

```
# Define the LP problem
model = LpProblem(name="Integer_Programming", sense=LpMaximize)

# Define integer variables
x = LpVariable(name="x", lowBound=0, cat=LpInteger)
y = LpVariable(name="y", lowBound=0, cat=LpInteger)

# Objective function (maximize profit)
model += 40 * x + 50 * y, "Profit"
```

```
# Constraints
model += 2 * x + 3 * y <= 18, "Machine_Time"
model += 3 * x + 2 * y <= 12, "Material"
```

Q2- Given the snippet code below.

i. Identify the objective function and constraints
ii. Identify the type (Linear or Integer)
iii. Maximize the objective function
iv. Find the optimum values of X and Y

```
# Step 1: Define the problem as a maximization problem
model = LpProblem(name="factory_optimization", sense=LpMaximize)

# Step 2: Define decision variables (non-negative)
x = LpVariable(name="Product_A", lowBound=0)  # Number of Product
y = LpVariable(name="Product_B", lowBound=0)  # Number of Product

# Step 3: Define the objective function (maximize profit)
model += 40 * x + 50 * y, "Total Profit"
```

```
# Step 4: Define constraints
model += (2 * x + 3 * y <= 18), "Machine_Time_Constraint"
model += (3 * x + 2 * y <= 12), "Material_Constraint"

# Step 5: Solve the problem
model.solve()
```