**Exercise 2: E-commerce Platform Search Function**

using System;

using System.Collections.Generic;

class Products

{

public int product\_id;

public string product\_name;

public string Category;

public Products(int product\_id, string product\_name, string Category)

{

this.product\_id = product\_id;

this.product\_name = product\_name;

this.Category = Category;

}

}

class search\_functionality

{

List<Products> product\_info = new List<Products>();

public void add\_to\_list(int product\_id, string name, string category)

{

Products p = new Products(product\_id, name, category);

product\_info.Add(p);

Console.WriteLine("Added");

}

public void linear\_Search(int p\_id)

{

foreach (Products p in product\_info)

{

if (p.product\_id == p\_id)

{

Console.WriteLine("Product Found in Linear Search");

return;

}

}

Console.WriteLine("Product cannot be found in Linear Search");

}

public void sort\_by\_id()

{

product\_info.Sort((p1, p2) => p1.product\_id.CompareTo(p2.product\_id));

}

public void Binary\_Search(int p\_id)

{

sort\_by\_id();

int left = 0;

int right = product\_info.Count - 1;

while (left <= right)

{

int mid = (left + right) / 2;

if (product\_info[mid].product\_id == p\_id)

{

Console.WriteLine("Product Found in Binary Search");

return;

}

else if (p\_id > product\_info[mid].product\_id)

{

left = mid + 1;

}

else

{

right = mid - 1;

}

}

Console.WriteLine("Not Found in Binary Search");

}

}

class Search\_Function

{

static void Main(string[] args)

{

search\_functionality p = new search\_functionality();

Console.WriteLine("Menu\n1.ADD\n2.Linear Search\n3.Binary Search\n4.Exit");

while (true)

{

Console.WriteLine("Enter the operation");

if (!int.TryParse(Console.ReadLine(), out int n))

{

Console.WriteLine("Invalid input.");

continue;

}

if (n == 1)

{

Console.WriteLine("Enter the id");

int id = int.Parse(Console.ReadLine());

Console.WriteLine("Enter the name");

string name = Console.ReadLine();

Console.WriteLine("Enter the category");

string cat = Console.ReadLine();

p.add\_to\_list(id, name, cat);

}

else if (n == 2)

{

Console.WriteLine("Enter the id to be found");

int id = int.Parse(Console.ReadLine());

p.linear\_Search(id);

}

else if (n == 3)

{

Console.WriteLine("Enter the id to be found");

int id = int.Parse(Console.ReadLine());

p.Binary\_Search(id);

}

else if (n == 4)

{

break;

}

else

{

Console.WriteLine("Invalid");

}

}

}

}

