EF Core using Database first approach using a Console application

Objectives:

1. Why Entity framework core?
    - Development approaches
2. Perform any 2 CRUD operation EF core for Database first approach using a Console application
    - NuGet package inclusion: Microsoft.EntityFrameworkCore.SqlServer, Microsoft.EntityFrameworkCore, Microsoft.EntityFrameworkCore.Tools, Use it in NuGet package manager console to the scaffold, Add & Save data.

The **EXPERIENCEPOST** web site maintenance team wants **IN MEMORY REPOSITORY** employee details to be pushed into **SQL REPOSITORY** before switching back **IN MEMORY REPOSITORY** to **SQL REPOSITORY.**

The technical details are as follows

Develop the skill post website www.EXPERIENCEPOST.com MVC web project with Entity Framework **Code First approach Repository Pattern** which before start functioning push all in-memory collection data to be upload SQL-repository in the database for the details are as follows.

1. Create model Classes

Create classes for Customer and Address under the Models folder, these classes are used as entities and entities set. These classes will have a mapping with a database because we are using the code-first approach and these classes will create a table in a database using the **DbContext** class of Entity Framework.

Employee: Class

Employee ID (PRIMARY KEY): Integer
First Name: String
Last Name: String
Password: String
Land Line: String
Cell Number: String
Email: String

Skill: Class

Skill Id: (PRIMARY KEY): Integer
Employee ID (FOREIGN KEY): Integer
Skill Name: String
Role: String
Experience In Years: Integer
PostalCode: String
Employee: virtual Customer

IEmployeeRepository: Interface

ClsEmployee **GetEmployee** (ClsEmployee employee);
IEnumerable<ClsEmployee> **GetAllEmployee** ();
ClsEmployee **Add** (ClsEmployee employee);
ClsEmployee **GetEmployeeByID** (int id);
ClsEmployee **Update** (ClsEmployee employeeChanges);
ClsEmployee **Delete** (int id);
ClsSkill **GetSkill** (int Id);
IEnumerable<ClsSkill> **GetAllSkill** (int Id);
void **AddSkill** (ClsSkill skill);
Void **DeleteSkill** (int id);

AppDBContext: DbContext Class

```
public AppDBContext (DbContextOptions<AppDBContext> options) : base(options)
{
}

protected override void OnModelCreating(ModelBuilder modelBuilder)
{
        modelBuilder.Seed();
}
public DbSet<Employee> Employees { get; set; }
public DbSet<Skill> Skills { get; set; }
```

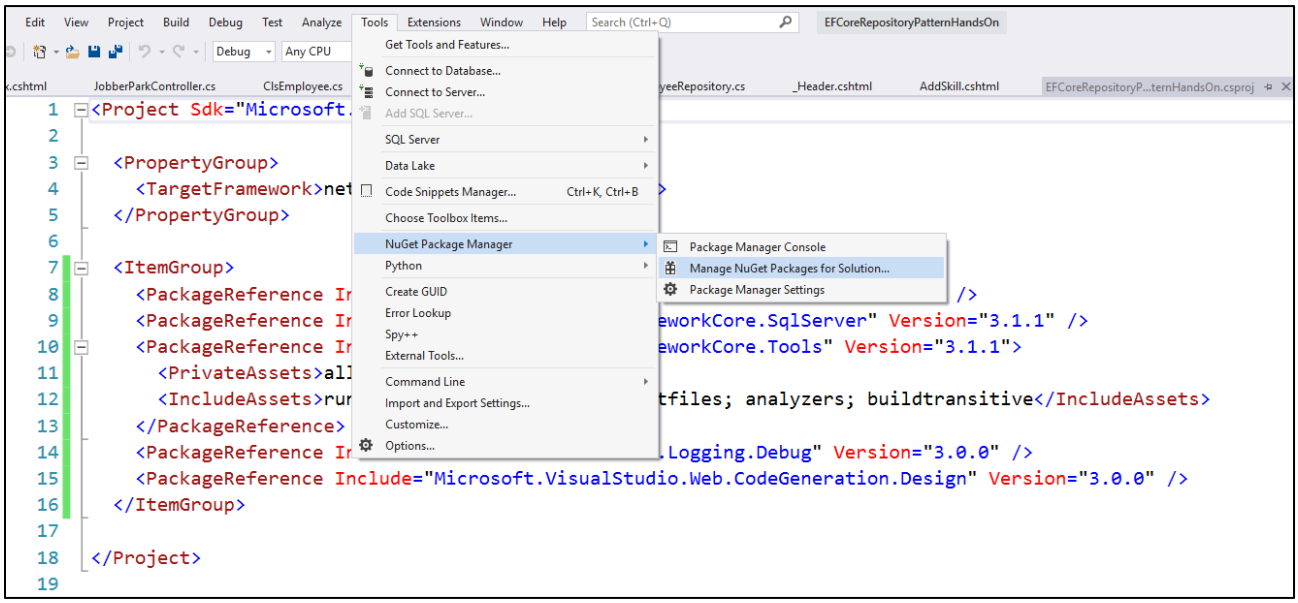
Hint: Add ModelBuilderExtensions class of static type and

ModelBuilderExtensions : static class

```
public static void Seed (this ModelBuilder modelBuilder)
 {
  modelBuilder.Entity<ClsEmployee> ().HasData (
                        new ClsEmployee {EmpID = 1, FirstName = "Aaron", LastName
       = "Hawkins", Password = "arron@123", CellNumber = "(660) 663-4518", Email =
       "aron.hawkins@aol.com" },
                        new ClsEmployee {EmpID = 2, FirstName = "Hedy", LastName =
       "Greene", Password = "hedy@123", CellNumber = "(608) 265-2215", Email =
       "hedy.greene@aol.com" },
                        New ClsEmployee { EmpID = 3, FirstName = "Melvin",
       LastName = "Porter", Password = "melvin@123", CellNumber = "(959) 119-
       8364", Email = "melvin.porter@aol.com" }
      );

   modelBuilder.Entity<ClsSkill> ().HasData (
       new ClsSkill {SkillId = 1, EmployeeID = 1, SkillName = "Microsoft Office
       Suite", Role = "Business Analyst", ExperienceInYears = 2},
       new ClsSkill {SkillId = 2, EmployeeID = 1, SkillName = "Testing", Role =
       "Developer", ExperienceInYears = 3},
       new ClsSkill {SkillId = 3, EmployeeID = 1, SkillName = "Stakeholder
       Management", Role = "Project Lead", ExperienceInYears = 4}
       );
}
```

Hint: Use **DataAnnotations** namespace to define Primary Key, Required Field, Email Address validation, Foreign Key, Display Name.

2. Open NuGet Manager and add the following packages



Add the following packages.

Microsoft.EntityFrameworkCore

Microsoft.EntityFrameworkCore.Tools

Microsoft.EntityFrameworkCore.SqlServer

3. Add SQLEmployeeRepository: Class

Implement interface: IEmployeeRepository

Hint: Reference code

```
    private readonly AppDBContext context;
    public SQLEmployeeRepository (AppDBContext context)
        {
            this.context = context;

}

 public Employee Add (Employee employee)
      {
          context.Employees.Add(employee);
          context.SaveChanges();
          return employee;
    }
```

4. **Make the changes in the Startup.cs code method `ConfigureServices`** Reference code is as follows

```
public void ConfigureServices(IServiceCollection services)
 {
    services.AddDbContextPool<AppDBContext>(
            options =>
options.UseSqlServer(_config.GetConnectionString("EmployeeDBConnection")));
    services.AddMvc().AddXmlDataContractSerializerFormatters();
    services.AddScoped<IEmployeeRepository,SQLEmployeeRepository>();
   //services.AddTransient<IEmployeeRepository, InMemoryRepository>();

    services.AddControllersWithViews();
 }
```

Note: **EmployeeDBConnection** is the name of the connection string, specified in the

appsettings.json

```
"ConnectionStrings": {
        "EmployeeDBConnection": "Data Source= (localdb)\\MSSQLLocalDB;Initial
Catalog=Database; Trusted_Connection=True"
 }
```

5. **Migrate and generate the table in the database with the following command**

```
PM> Add-Migration
```

Note: provide the name to this transaction

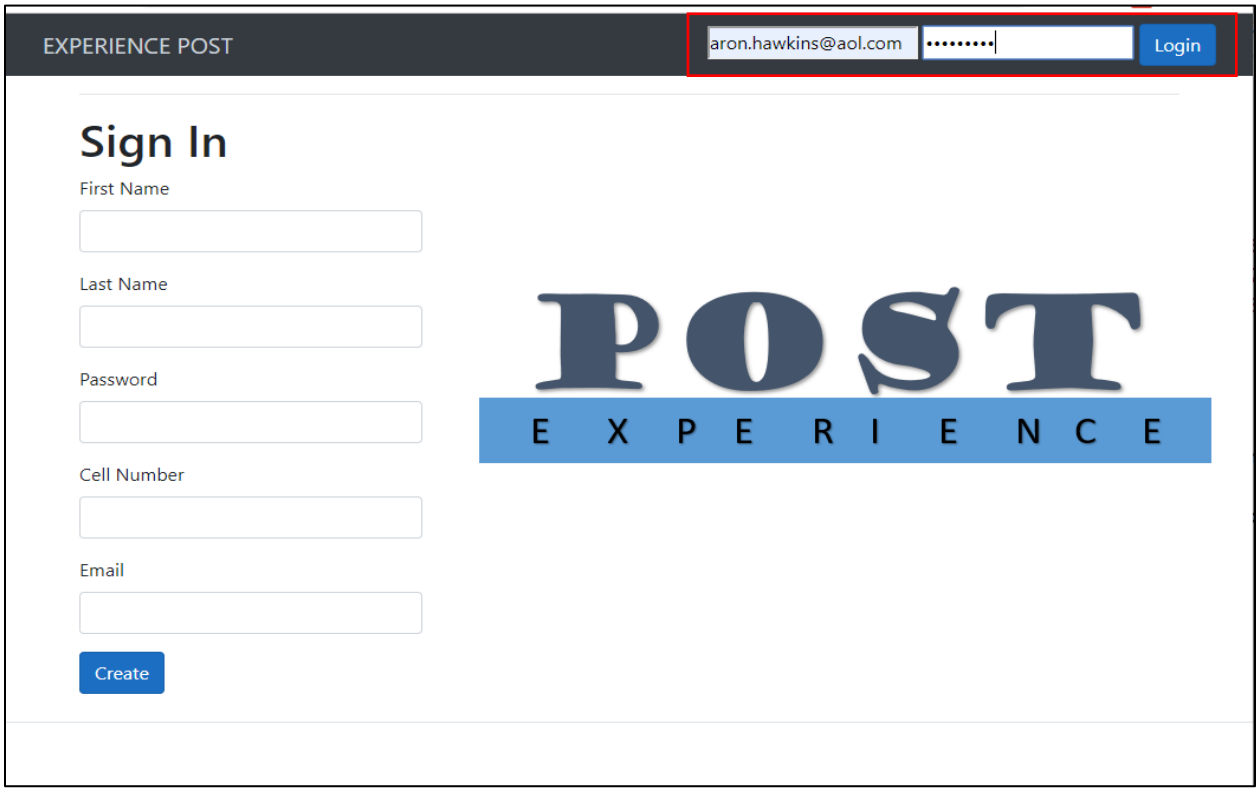
```
PM> update-database
```

6. Add Controller **ExperiencePostController** with following reference code

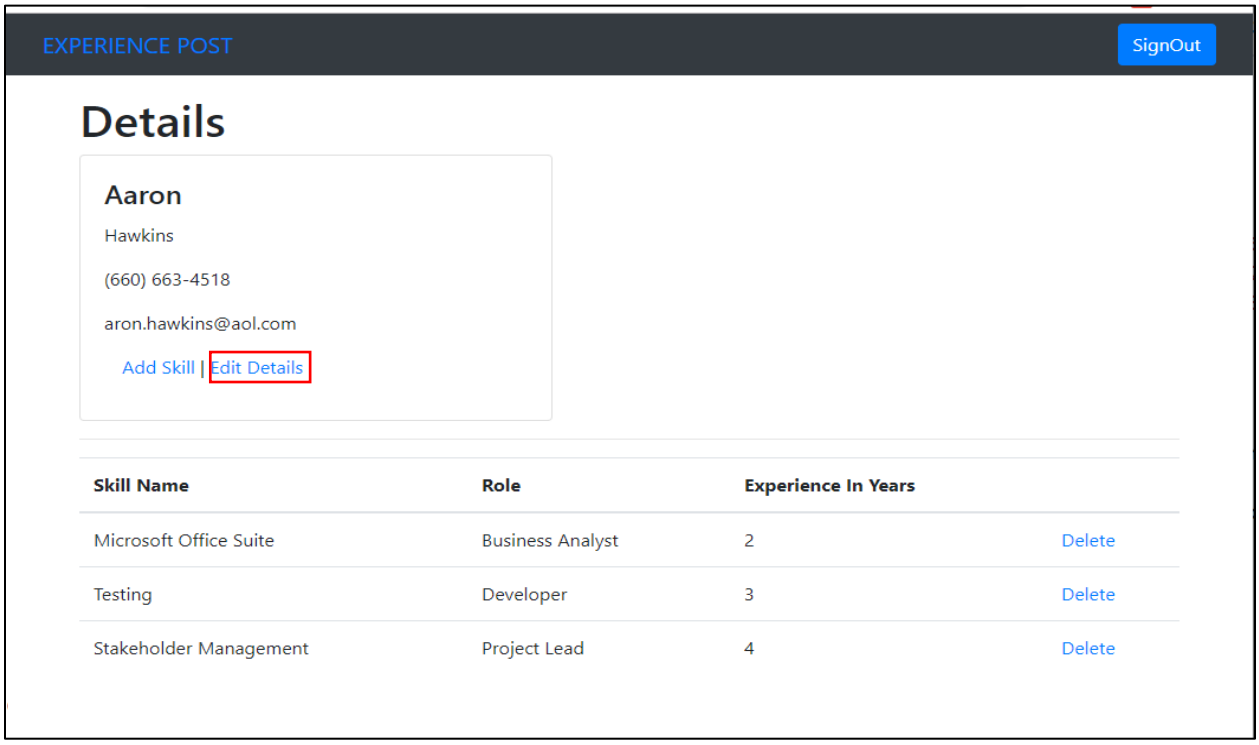
```
public class ExperiencePostController: Controller
    {
  private readonly IEmployeeRepository _employeeRepository;

  public ExperiencePostController (IEmployeeRepository
  employeeRepository)
  {
      _employeeRepository = employeeRepository;
  }
  public ActionResult Index()
```

```
{
    return View();
}

[HttpGet]
 public ActionResult AddSkill(int id)
 {
     Skill skill = new Skill();
     skill.EmployeeID = id;

     return View(skill);

 }
```

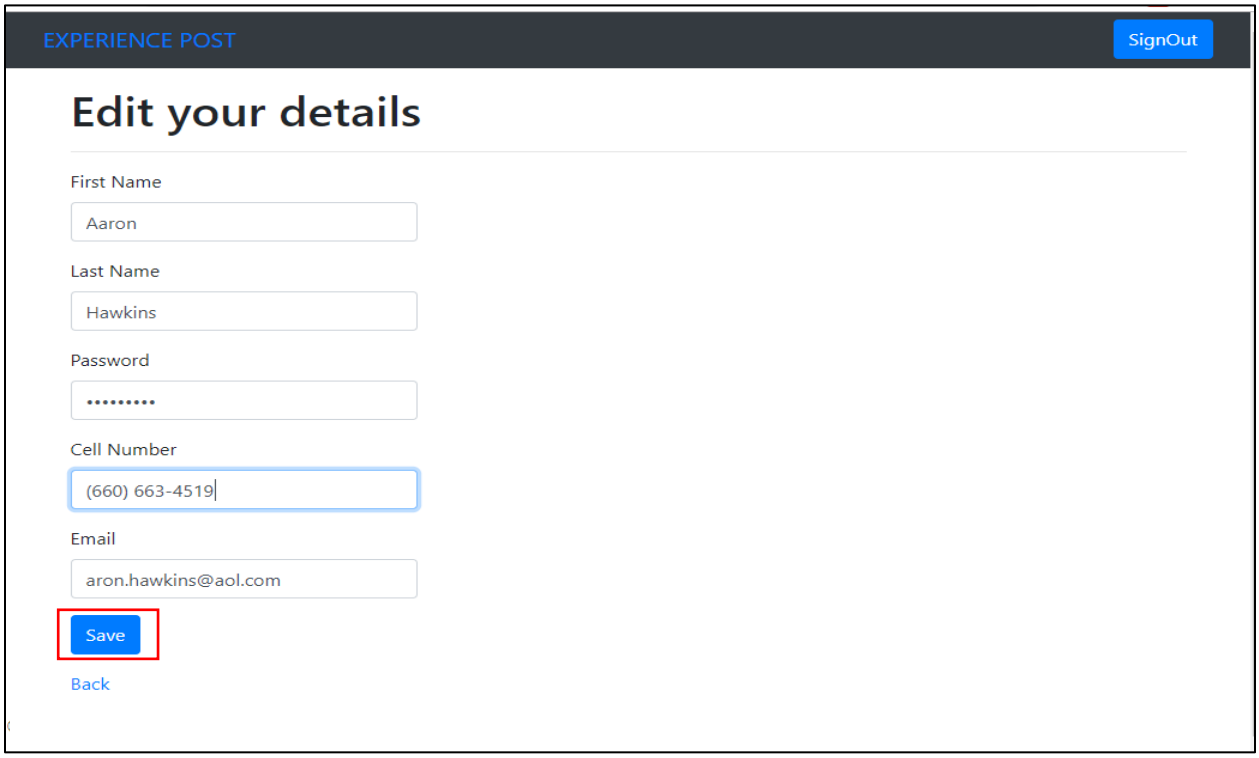
7. After registration Employee has to provide credentials by the time of login.



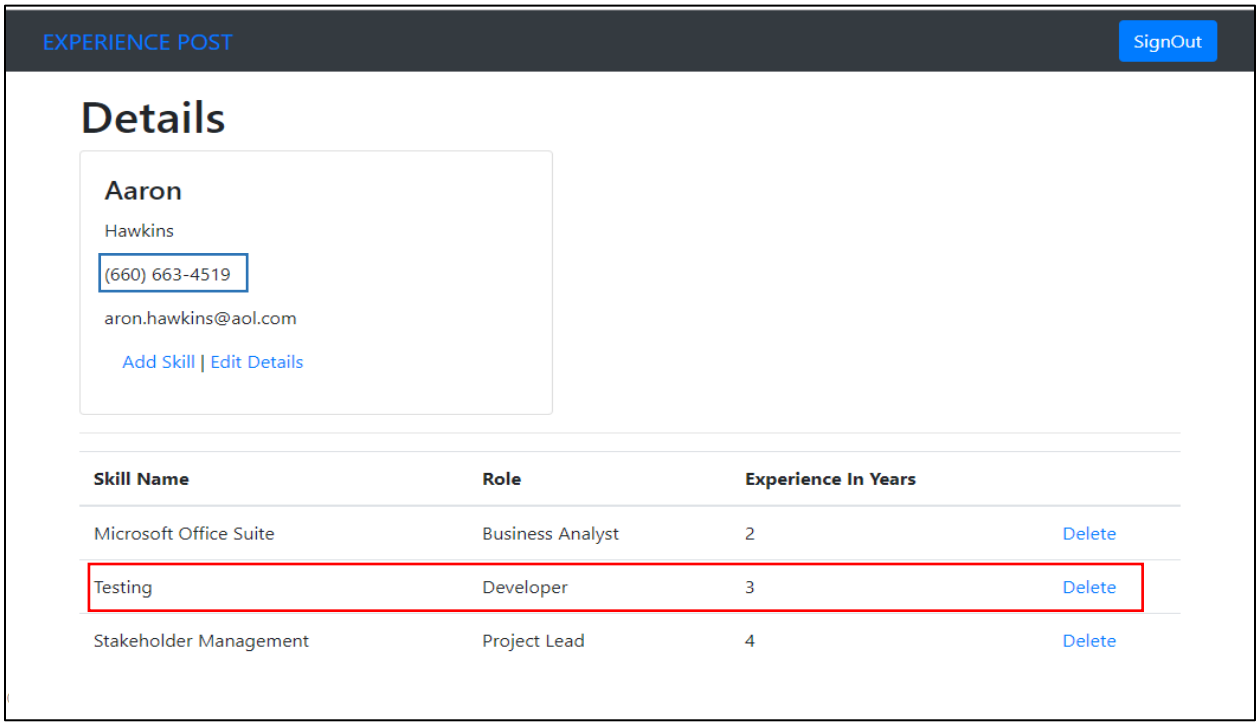
8. After login, the employee will switch to Home view / Details, where employee details will be flashes along with their experiences.



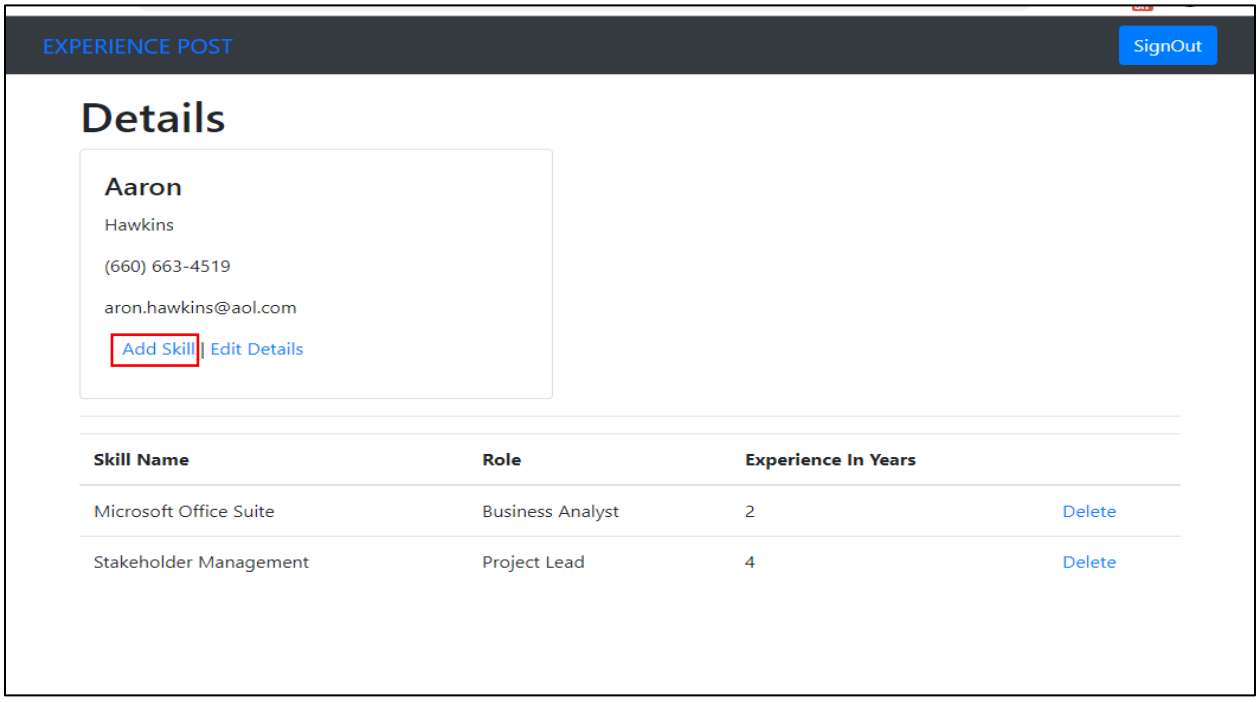
9. When the Employee will click on the edit details the view will switch to Edit Employee details view where Employee will allow to amendment in their details.



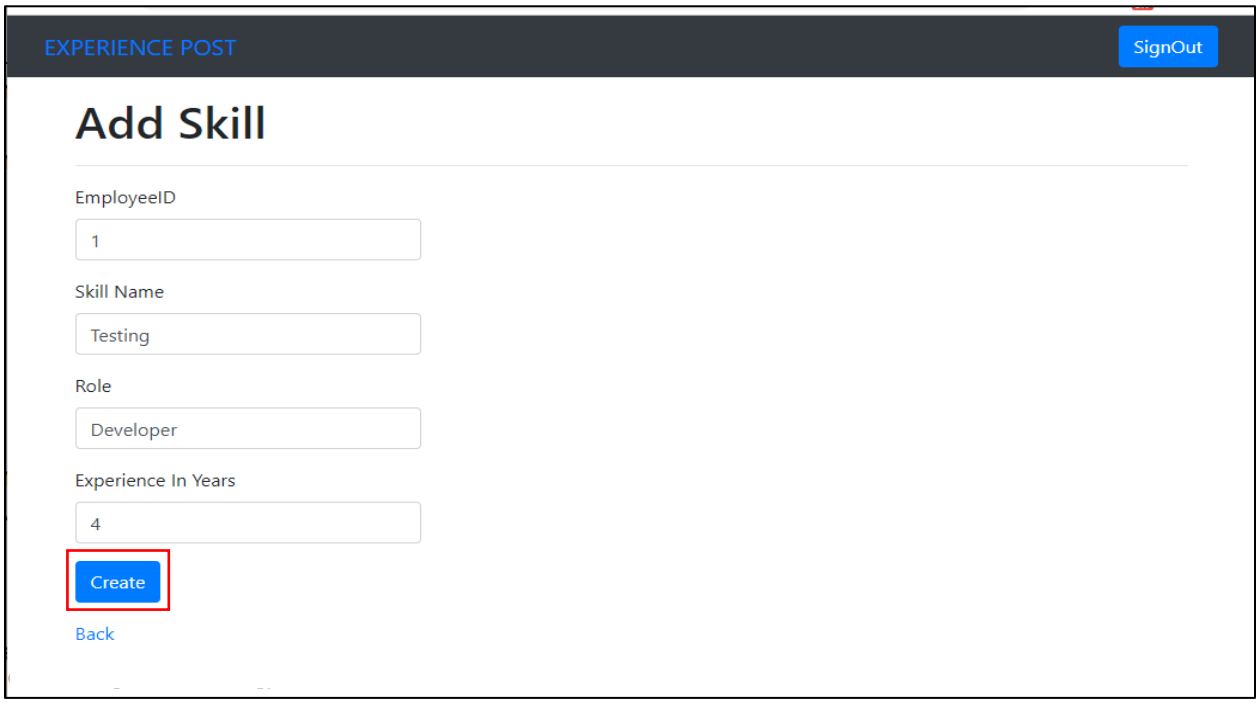
10. Similarly, when the employee will click on the delete skill, it will delete the employee skill from the repository.

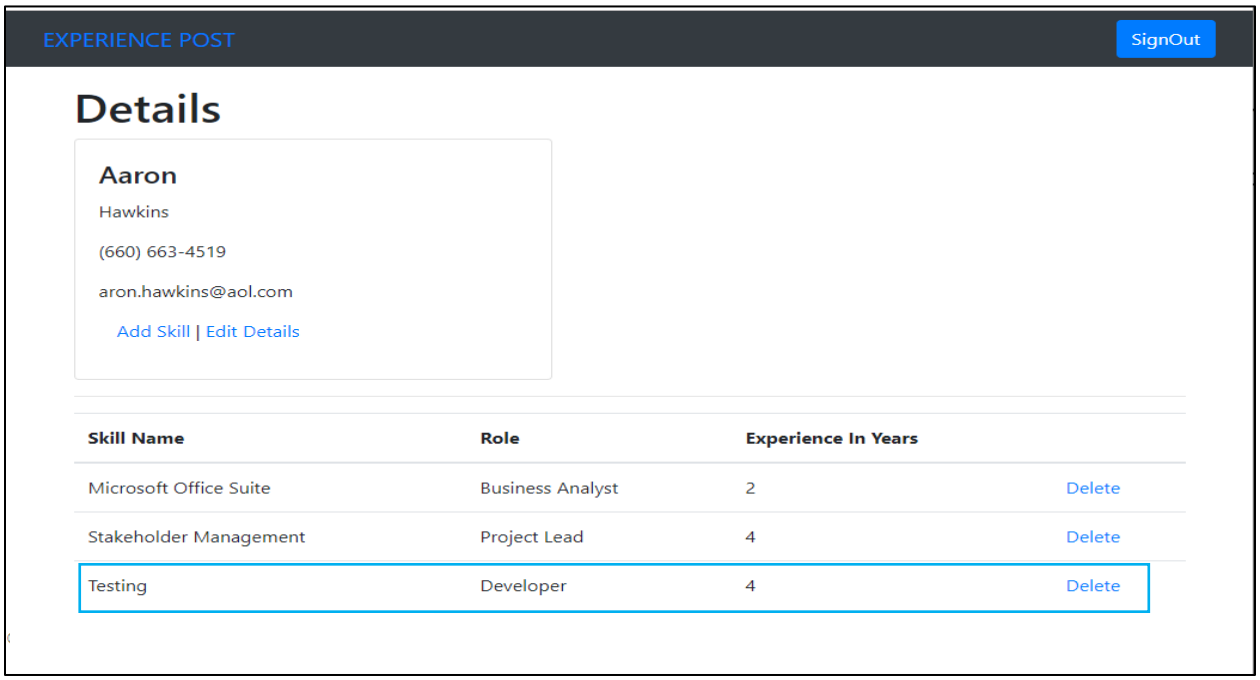


11. When Employee will click on the Add Skills link, the view will switch to add skill view. Where Employee has to input skill details.



12. After providing skill details, the employee has to click on the create button and skill details were added to the employee skill details and the view will switch back to the details view of the employee.





13. When the Employee will click on the Sign-out, the view will switch back to the login view.