UML Design

A screenshot of a cell phone

Description automatically generated

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**using** **System**;

**namespace** **ECE2310\_HW10\_01**

{

**class** **Driver**

{

**static** **void** Main(string[] args)

{

Student student = **new** Student();

Console.WriteLine(student);

Student student2 = **new** Student(12345, "mreeves", "mreeves@calpoly.edu", 3.67);

Console.WriteLine(student2);

Undergrad ugrad = **new** Undergrad();

ugrad.Year = 2;

ugrad.Email = "jackdaniels@harvard.edu";

ugrad.GPA = 3.98;

ugrad.ID = 14562;

ugrad.Username = "jdaniels";

Console.WriteLine(ugrad);

Grad grad = **new** Grad();

grad.ID = 57752;

grad.Username = "tstark";

grad.DegreeType = "BS";

grad.GPA = 3.21;

grad.Email = "tonystark@starkindustries.io";

grad.ResearchTopic = "FPGA-accelerated Network Architecture";

Console.WriteLine(grad);

}

}

}

**using** **System**;

**namespace** **ECE2310\_HW10\_01**

{

**public** **class** **Student**

{

**private** int \_id = 0;

**private** string \_username = "student";

**private** string \_email = "student@school.edu";

**private** double \_gpa = 0.00;

**public** int ID

{

**get** => \_id;

**set**

{

**if** (**value** > 0)

\_id = **value**;

}

}

**public** string Username

{

**get** => \_username;

**set** => \_username = **value**;

}

**public** string Email

{

**get** => \_email;

**set**

{

**if** (!(**value**.Contains('@')))

{

Console.WriteLine("Email not valid.");

Environment.Exit(1);

}

\_email = **value**;

}

}

**public** double GPA

{

**get** => \_gpa;

**set**

{

**if** (**value** > 0 && **value** <= 4)

\_gpa = **value**;

**else**

{

Console.ForegroundColor = ConsoleColor.Red;

Console.WriteLine("[-] GPA not between 0 and 4");

Console.ResetColor();

}

}

}

**public** Student() { }

**public** Student(int id, string username, string email, double gpa)

{

**this**.ID = id;

**this**.Username = username;

**this**.Email = email;

**this**.GPA = gpa;

}

**public** **override** string ToString()

{

**return** ($"[+] Student Information:\n ID: {ID.ToString("D5")}\n Username: {Username}\n Email: {Email}\n GPA: {GPA:0.00}");

}

}

}

**using** **System**;

**namespace** **ECE2310\_HW10\_01**

{

**public** **class** **Grad** : Student

{

**private** string \_researchTopic = "Topic";

**private** string \_degreeType = "Type";

**public** string ResearchTopic

{

**get** => \_researchTopic;

**set** => \_researchTopic = **value**;

}

**public** string DegreeType

{

**get** => \_degreeType;

**set**

{

bool valid = **value**.Equals("BS") || **value**.Equals("BA");

**if** (valid == **false**)

{

Console.WriteLine("Error. Degree type must be either 'BA' or 'BS'.");

Environment.Exit(1);

}

\_degreeType = **value**;

}

}

**public** Grad() { }

**public** **override** string ToString()

{

**return** ($"[+] Student Information:\n ID: {ID.ToString("D5")}\n Username: {Username}\n Email: {Email}\n GPA: {GPA:0.00}\n Type: Graduate\n Degree: {DegreeType}\n Research: {ResearchTopic}");

}

}

}

**using** **System**;

**namespace** **ECE2310\_HW10\_01**

{

**public** **class** **Undergrad** : Student

{

**private** int \_year = 1;

**public** int Year

{

**get** => \_year;

**set**

{

**if** (**value** >= 1 && **value** <= 5)

\_year = **value**;

}

}

**public** Undergrad() { }

**public** string Standing(int year)

{

string standing;

**switch** (year)

{

**case** 1:

standing = "Freshman";

**break**;

**case** 2:

standing = "Sophomore";

**break**;

**case** 3:

standing = "Junior";

**break**;

**case** 4:

standing = "Senior";

**break**;

**case** 5:

standing = "Super Senior";

**break**;

**default**:

standing = "Standing";

**break**;

}

**return** standing;

}

**public** **override** string ToString()

{

**return** ($"[+] Student Information:\n ID: {ID.ToString("D5")}\n Username: {Username}\n Email: {Email}\n GPA: {GPA:0.00}\n Type: Undergrad\n Academic Standing: {Standing(Year)}");

}

}

}