

Lab 4 Part 1

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Variables

Variable	Possible Values	Data Type
characterName	any	string
characterLevel	1-20	int
conScores	1-30	Dictionary(int, int)
conScore	1-30	int
characterRaces	Player's handbook races (See table below)	Dictionary (String, Int)
characterRace	Player's race	String
characterClasses	Provided classes (See table below)	Dictionary (String, int)
characterClass	Player's class	String
toughFeat	true/false	boolean
stoutFeat	true/false	boolean
diceAveraged	Averaged (true), rolled (false)	boolean
hitPoints	-	int
roll	1-12 (based on dice type)	int
totalRoll	1-240 (based on total from hit die rolls)	int

Methods

Method Name	Purpose	Input	Return
setup	Declares the conScore, characterRace, and characterClass Dictionaries.	N/A	void
calculateHP	Calculates the player's HP based on level, constitution, race, feats, roll type, and class.	N/A	int
checkValues	Ensures all values are within constraints as listed above for inputs	N/A	void

output	Prints the user's character stats as specified below and total HP points	N/A	void
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Race Dictionary

Race (Key)	Extra HP (Value)
Aasmar	-
Dragonborn	-
Dwarf	+2
Elf	-
Gnome	-
Goliath	+1
Halfling	-
Human	-
Orc	+1
Tiefling	-

All those without extra HP would be assigned a value of 0.

```
Dictionary<String, int> characterRaces = new Dictionary<String, int>()
{
    { "Aasmar", 0 },
    { "Dragonborn", 0 },
    { "Dwarf", 2 },
    { "Elf", 0 },
    { "Gnome", 0 },
    { "Goliath", 1 },
    { "Halfling", 0 },
    { "Human", 0 },
    { "Orc", 1 },
    { "Tiefling", 0 },
};
```

Class Dictionary

Class (Key)	Hit Die (Value)
Artificer	d8
Barbarian	d12
Bard	d8
Cleric	d8
Druid	d8
Fighter	d10
Monk	d8
Ranger	d10
Rogue	d8
Paladin	d10
Sorcerer	d6
Wizard	d6
Warlock	d8

```
Dictionary<String, int> characterClasses = new Dictionary<String, int>();
```

```
{  
    { "Artificer", 8 },  
    { "Barbarian", 12 },  
    { "Bard", 8 },  
    { "Cleric", 8 },  
    { "Druid", 8 },  
    { "Fighter", 10 },  
    { "Monk", 8 },  
    { "Ranger", 10 },  
    { "Rogue", 8 },  
    { "Paladin", 10 },  
    { "Sorcerer", 6 },  
    { "Wizard", 6 },  
    { "Warlock", 8 },  
};
```

Constitution Dictionary

Constitution Score (Key)	Modifier (Value)
1	-5
2 - 3	-4
4 - 5	-3
6 - 7	-2
8 - 9	-1
10 - 11	+0
12 - 13	+1
14 - 15	+2
16 - 17	+3
18 - 19	+4
20 - 21	+5
22 - 23	+6
24 - 25	+7
26 - 27	+8
28 - 29	+9
30	+10

For this, we can use a for loop that starts at 1 and ends at 30. If the number is even (`int % 2 == 0`), the modifier value goes up by 1.

HP Calculation

Needed for calculation:

- characterLevel
- Constitution Score
- Race
- Feat
- Averaged or Rolled

```
if (diceAveraged)
{
    int averagedRoll; // This is turned into an int so that it can be rounded up.
    switch (characterClasses[characterClass])
    {
        case 6:
            averagedRoll = 4;
            break;
        case 8:
```

```

        averagedRoll = 5;
        break;
    case 10:
        averagedRoll = 6;
        break;
    case 12:
        averagedRoll = 7;
        break;
    }
}

hitPoints = (characterLevel * averagedRoll) + (characterLevel * conScores[conScore]) + (characterLevel *
characterRaces[characterRace]);
}
else
{
    int randomRoll = Random.Range(1, characterClasses[characterClass] + 1);
    hitPoints = (characterLevel * averagedRoll) + (characterLevel * conScores[conScore]) + (characterLevel *
characterRaces[characterRace]);
}

```

Output Statement

```

if (toughFeat && stoutFeat) {
    Debug.Log("My character " + characterName + " is a level " + characterLevel + " " + characterClass + " with a
CON score of " + conScore + " and is of " + characterRace + " race and has Tough and Stout feats. I want the HP " +
rollType);
} else if (toughFeat) {
    Debug.Log("My character " + characterName + " is a level " + characterLevel + " " + characterClass + " with a
CON score of " + conScore + " and is of " + characterRace + " race and has Tough feat. I want the HP " + rollType);
} else if (stoutFeat) {
    Debug.Log("My character " + characterName + " is a level " + characterLevel + " " + characterClass + " with a
CON score of " + conScore + " and is of " + characterRace + " race and has Stout feat. I want the HP " + rollType);
} else {
    Debug.Log("My character " + characterName + " is a level " + characterLevel + " " + characterClass + " with a
CON score of " + conScore + " and is of " + characterRace + " race and has no feats. I want the HP " + rollType);
}

```