```cpp
#include "Character.h"

Character::Character()
{
    this->xPos = 0.0;
    this->yPos = 0.0;

    this->name = "";
    this->level = 1;
    this->exp = 0;
    this->expNext = 0;

    this->strength = 0;
    this->vitality = 0;
    this->dexterity = 0;
    this->intelligence = 0;

    this->hp = 0;
    this->hpMax = 0;
    this->stamina = 0;
    this->staminaMax = 0;
    this->damageMin = 0;
    this->damageMax = 0;
    this->defense = 0;
    this->luck = 0;

    this->statPoints = 0;
    this->skillPoints = 0;
}

Character::~Character()
{

}


void Character::initialize(const std::string name)
{
    this->xPos = 0.0;
    this->yPos = 0.0;

    this ->name = name;
    this->level = 1;
    this->exp = 0;
    this->expNext = static_cast<int>((50 / 3) * ((pow(level, 3) - 6 * pow(level, 2)) + 17 * level - 12)) + 100;

    this->strength = 5;
    this->vitality = 5;
    this->dexterity = 5;
    this->intelligence = 5;

    this->hp = 10;
    this->hpMax = 10;
    this->stamina = 10;
    this->staminaMax = 10;
    this->damageMin = 2;
    this->damageMax = 4;
    this->defense = 1;
    this->luck = 1;

    this->statPoints = 0;
```

```cpp
    this->skillPoints = 0;
}

void Character::printStats() const
{
    std::cout << "= Character Sheet = " << std::endl;
    std::cout << "= Name: " << this->name <<std::endl;
    std::cout << "= Level:  " << this->level << std::endl;
    std::cout << "= Exp:  " << this->exp << std::endl;
    std::cout << "= Exp to Next Level:  " << this->expNext << std::endl;
    std::cout << std::endl;
    std::cout << "= Strength: " << this->strength << std::endl;
    std::cout << "= Vitality: " << this->vitality << std::endl;
    std::cout << "= Dexterity: " << this->dexterity << std::endl;
    std::cout << "= Intelligence: " << this->intelligence << std::endl;
    std::cout << std::endl;
    std::cout << "= HP: " << this->hp << "/" << this->hpMax << std::endl;
    std::cout << "= Stamina: " << this->stamina << "/" << this->staminaMax << std::endl;
    std::cout << "= Damage: " << this->damageMin << "-"<< this->damageMax <<  std::endl;
    std::cout << "= Defense " << this->defense << std::endl;
    std::cout << "= Luck " << this->luck << std::endl;
    std::cout << std::endl;
}

void Character::levelUp()
{
    while (exp >= expNext)
    {
        exp -= expNext;
        level++;
        this->expNext = static_cast<int>((50 / 3) * ((pow(level, 3) - 6 * pow(level, 2)) + 17 * level - 12)) + 100;

        this->statPoints++;
        this->skillPoints++;

    }
}


// Take all attributes and outputs as string
// expensive operation but not used much
std::string Character::getAsString() const
{
    return std::to_string(xPos) + " "
        + std::to_string(yPos) + " "
        + name + " "
        + std::to_string(level) + " "
        + std::to_string(exp) + " "
        + std::to_string(strength) + " "
        + std::to_string(vitality) + " "
        + std::to_string(dexterity) + " "
        + std::to_string(intelligence) + " "
        + std::to_string(hp) + " "
        + std::to_string(stamina) + " "
        + std::to_string(statPoints) + " "
        + std::to_string(skillPoints) + " ";


}
```