Fundamentals of programming – COS10029

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Lab 11 Task 11.1

```cpp
#include <iostream>
#include <string>
#include <vector>

using namespace std;

enum DifficultyKind {
    Normal,
    Hard,
    Insane
};

struct TargetAnimal {
    string name;
    int hitId;
    DifficultyKind difficulty;
    int value;
};

DifficultyKind read_difficulty() {
    int difficulty;
    while (true) {
        cout << "Select Difficulty \n0: Normal \n1: Hard \n2: Insane: ";
        cin >> difficulty;
        if (difficulty >= 0 && difficulty <= 2) {
            return static_cast<DifficultyKind>(difficulty);
        } else {
            cout << "Invalid difficulty. Please try again." << endl;
        }
    }
}

TargetAnimal read_target_animal() {
    TargetAnimal animal;
    cout << "Enter target animal name: ";
    cin.ignore();
    getline(cin, animal.name);
```

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        cout << "Enter hit ID: ";
        cin >> animal.hitId;
        animal.difficulty = read_difficulty();
        while (true) {
            cout << "Enter value: ";
            cin >> animal.value;
            if (animal.value >= 0) {
                break;
            } else {
                cout << "Value must be 0 or larger. Please try again." << endl;
            }
        }
        return animal;
}

void add_target_animal(vector<TargetAnimal>& animals) {
    TargetAnimal animal = read_target_animal();
    animals.push_back(animal);
}

void print_target_animal(const TargetAnimal& animal) {
    string difficultyStr;
    switch (animal.difficulty) {
        case Normal: difficultyStr = "Normal"; break;
        case Hard: difficultyStr = "Hard"; break;
        case Insane: difficultyStr = "Insane"; break;
    }
    cout << "\nDifficulty: " << difficultyStr
         << "\nTarget: " << animal.name
         << "\nHit ID: " << animal.hitId
         << "\nValue: $" << animal.value
         << "\n" << (animal.value < 1000 ? "Small animal" : "Large animal") <<
endl;
}

void print_all_target_animals(const vector<TargetAnimal>& animals) {
    for (const auto& animal : animals) {
        print_target_animal(animal);
    }
}

void most_valuable_target(const vector<TargetAnimal>& animals, DifficultyKind
difficulty) {
    const TargetAnimal* mostValuable = nullptr;
    for (const auto& animal : animals) {
```

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        if (animal.difficulty == difficulty) {
            if (!mostValuable || animal.value > mostValuable->value) {
                mostValuable = &animal;
            }
        }
    }
    if (mostValuable) {
        cout << "Most valuable target for difficulty " << difficulty << ": ";
        print_target_animal(*mostValuable);
    } else {
        cout << "No targets found for this difficulty." << endl;
    }
}

int main() {
    vector<TargetAnimal> animals;
    int choice;
    do {
        cout << "Menu:\n1. Add target animal\n2. Print all target animals\n3.
Print highest value for a kind\n4. Quit\nEnter your choice: ";
        cin >> choice;
        switch (choice) {
            case 1:
                add_target_animal(animals);
                break;
            case 2:
                print_all_target_animals(animals);
                break;
            case 3:
                int difficulty;
                cout << "Enter difficulty \n0: Normal \n1: Hard \n2: Insane: ";
                cin >> difficulty;
                if (difficulty >= 0 && difficulty <= 2) {
                    most_valuable_target(animals,
static_cast<DifficultyKind>(difficulty));
                } else {
                    cout << "Invalid difficulty." << endl;
                }
                break;
            case 4:
                cout << "Quitting..." << endl;
                break;
            default:
                cout << "Invalid choice. Please try again." << endl;
        }
```

```
    } while (choice != 4);
    return 0;
}
```

```
Matheesha@MATHEESHA MINGW64 ~
$ cd '/c/Users/Matheesha/OneDrive - Swinburne University/Desktop/NCHS ICT Diploma/COS10029 - Fundame
ntals of programming/Week11'

Matheesha@MATHEESHA MINGW64 /c/Users/Matheesha/OneDrive - Swinburne University/Desktop/NCHS ICT Dipl
oma/COS10029 - Fundamentals of programming/Week11
$ pwd
/c/Users/Matheesha/OneDrive - Swinburne University/Desktop/NCHS ICT Diploma/COS10029 - Fundamentals
of programming/Week11

Matheesha@MATHEESHA MINGW64 /c/Users/Matheesha/OneDrive - Swinburne University/Desktop/NCHS ICT Dipl
oma/COS10029 - Fundamentals of programming/Week11
$ ls
task11.1.cpp

Matheesha@MATHEESHA MINGW64 /c/Users/Matheesha/OneDrive - Swinburne University/Desktop/NCHS ICT Dipl
oma/COS10029 - Fundamentals of programming/Week11
$ g++ task11.1.cpp -o o

Matheesha@MATHEESHA MINGW64 /c/Users/Matheesha/OneDrive - Swinburne University/Desktop/NCHS ICT Dipl
oma/COS10029 - Fundamentals of programming/Week11
$ ./o
Menu:
1. Add target animal
2. Print all target animals
3. Print highest value for a kind
4. Quit
Enter your choice: 1
Enter target animal name: Donkey
Enter hit ID: 115869
Select Difficulty
0: Normal
1: Hard
2: Insane: 1
Enter value: 800
Menu:
1. Add target animal
2. Print all target animals
3. Print highest value for a kind
4. Quit
Enter your choice: 2

Difficulty: Hard
Target: Donkey
Hit ID: 115869
Value: $800
Small animal
Menu:
1. Add target animal
2. Print all target animals
3. Print highest value for a kind
4. Quit
Enter your choice: 1
Enter target animal name: Sheep
Enter hit ID: 596
Select Difficulty
0: Normal
```

```
4. Quit
Enter your choice: 1
Enter target animal name: Donkey
Enter hit ID: 115869
Select Difficulty
0: Normal
1: Hard
2: Insane: 1
Enter value: 800
Menu:
1. Add target animal
2. Print all target animals
3. Print highest value for a kind
4. Quit
Enter your choice: 2

Difficulty: Hard
Target: Donkey
Hit ID: 115869
Value: $800
Small animal
Menu:
1. Add target animal
2. Print all target animals
3. Print highest value for a kind
4. Quit
Enter your choice: 1
Enter target animal name: Sheep
Enter hit ID: 596
Select Difficulty
0: Normal
1: Hard
2: Insane: 0
Enter value: 250
Menu:
1. Add target animal
2. Print all target animals
3. Print highest value for a kind
4. Quit
Enter your choice: 3
Enter difficulty
0: Normal
1: Hard
2: Insane: 0
Most valuable target for difficulty 0:
Difficulty: Normal
Target: Sheep
Hit ID: 596
Value: $250
Small animal
Menu:
1. Add target animal
2. Print all target animals
3. Print highest value for a kind
4. Quit
Enter your choice: 4
Quitting...
```