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CMP 120L– Programming I Lab
Lab 4 - Loops

Lab Objectives:
1. Practice using while loops
2. Practice using do-while loops
3. Practie using for loops

Lab Exercises:

1. The loading bar shows the progress of the data loading process in a game. Write a c++ program that draws the loading bar based on the progress percentage. The remaining percentage should be filled with spaces. For example, if the progress is 70%, the program should draw 70 progress bars followed by 30 spaces. Note that the progress can never be <0 or >100. **Use while loops.**
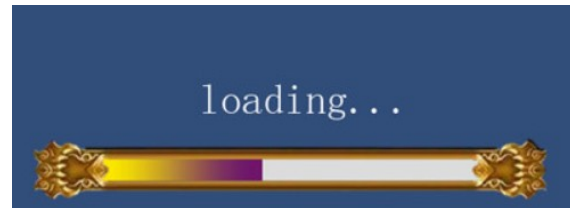
Code (text):

```cpp
#include <iostream>
using namespace std;
int main() {
        int percentage,i=0;
        cout << "Enter the progress percentage: ";
        cin >> percentage;
        if (percentage > 0 && percentage<100) {
                cout << "[";
                while (i < percentage) {
                        cout << "|";
                        i++;
                }
                while (i < 100) {
                        cout << " ";
                        i++;
                }
                cout << "]";
        }
        else
                cout << "Invalid percentage.";
        return 0;
}
```

Output screenshot:

2. PC game players control the movement of their character using the WSAD keys as follows:
   - W: forward
   - S: backwards
   - D: right
   - A: left

Write a c++ program that allows the player to move their character. Declare two variables X and Y to resemble the player's coordinates in the 2D space and initialize them with 0. In a loop, prompt the user to click a key, then move the character accordingly by updating their coordinates. The program should stop one the player enters E.
Use a do-while loop.

Code (text):

```cpp
#include <iostream>
using namespace std;
int main()
{
        int x = 0, y = 0;
        char move=' ';
        do
        {
                cout << "Character's coordinates: (" << x << "," << y << ")" << endl;
                cout << "Press a key (WSAD) to move: ";
                cin >> move;
                if (move == 'W') y += 1;
                else if (move == 'S') y -= 1;
                else if (move == 'A') x -= 1;
                else if (move == 'D')x += 1;
```

```cpp
            else if (move == 'E') cout << "game over.";
            else cout << "Invalid Input";
    } while (move != 'E');

    return 0;
}
```
Output screenshot:


```
Microsoft Visual Studio Debug Console
Character's coordinates: (0,0)
Press a key (WSAD) to move:
W
Character's coordinates: (0,1)
Press a key (WSAD) to move: S
Character's coordinates: (0,0)
Press a key (WSAD) to move: S
Character's coordinates: (0,-1)
Press a key (WSAD) to move: D
Character's coordinates: (1,-1)
Press a key (WSAD) to move: D
Character's coordinates: (2,-1)
Press a key (WSAD) to move: A
Character's coordinates: (1,-1)
Press a key (WSAD) to move: H
Invalid InputCharacter's coordinates: (1,-1)
Press a key (WSAD) to move: E
game over.
U:\aisha-f23-cmp120-03\lab6\x64\Debug\lab6.exe (process 588) exited with code 0.
Press any key to close this window . . .
```

3. Players can gain points by defeating monsters. There are three types of monsters in the game:
- Bokoblin: 5 points
- Moblin: 10 points
- Hinox: 15 points

Write a c++ program that helps the player calculate their points. The program should ask the user to input the number of monsters they defeated, then the names of the monsters. The program should then print the player's points. **Use a for loop.**

Code (text):
```cpp
#include <iostream>
using namespace std;
int main()
{
    int mon_count,points=0;
    string monster;
    cout << "How many monsters have you defeated? ";
    cin >> mon_count;
    for (mon_count; mon_count > 0; mon_count--)
    {
        cout << "Enter name of monster: ";
        cin >> monster;
        if (monster == "Bokoblin") points += 5;
```
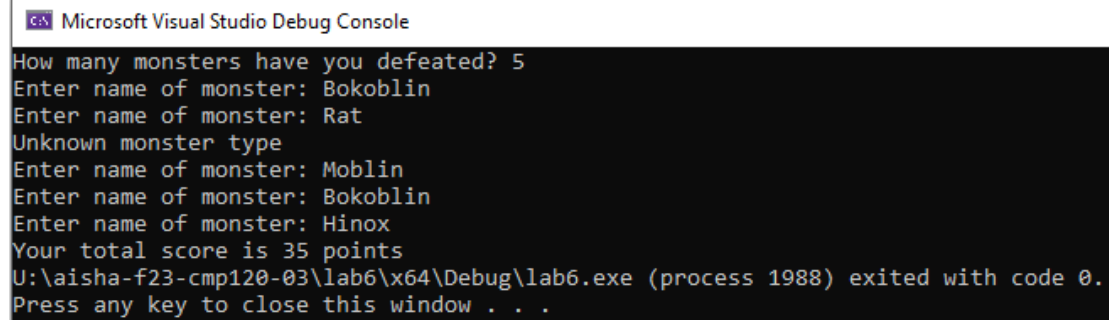
3
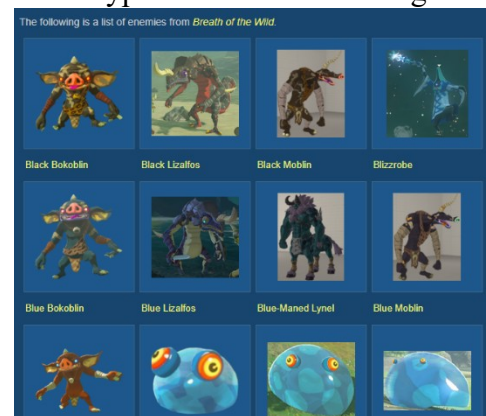
```cpp
        else if (monster == "Moblin") points += 10;
        else if (monster == "Hinox") points += 15;
        else cout << "Unknown monster type"<<endl;
    }
    cout << "Your total score is " << points << " points";
    return 0;
}
```

Output screenshot:

```
Microsoft Visual Studio Debug Console

How many monsters have you defeated? 5
Enter name of monster: Bokoblin
Enter name of monster: Rat
Unknown monster type
Enter name of monster: Moblin
Enter name of monster: Bokoblin
Enter name of monster: Hinox
Your total score is 35 points
U:\aisha-f23-cmp120-03\lab6\x64\Debug\lab6.exe (process 1988) exited with code 0.
Press any key to close this window . . .
```