- Exercises

In this exercise, you will extend the MyDistance class from the example in the previous lesson.

WE'LL COVER THE FOLLOWING

Task 1

Extend `MyDistance` from the previous example to support the following units:

1. Feet (ft)
    - $1 ft = 0.3048m $
2. Mile (mi)
    - $1 mi = 1609.344 m $

> Tip: Define a good suffix for these units as well.

Task 2

Your weekly drive with your car consists of many components: `work`, `workPerDay`, `workout`, `abbrevationToWork` and `shopping`.

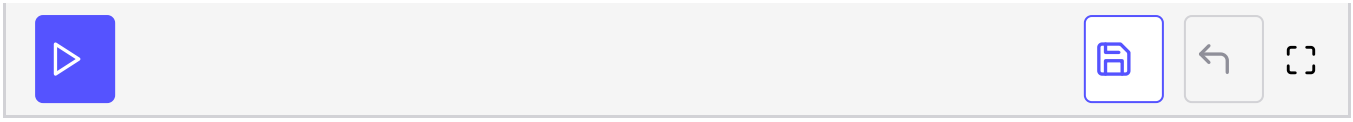
```
workPerDay = 2 * work;
```

Extend `MyDistance` so you can calculate the total distance of your weekly drive. An example follows:

```
Distance::myDistance myDisPerWeek;
```

```
myDistPerWeek= 4 * workPerDay - 3 * abbrevationToWork + workout + shopping
;
```

```
//userDefinedLiteral.cpp
#include <iostream>
#include <ostream>

namespace Distance{
  class MyDistance{
    public:
      MyDistance(double i):m(i){}

      friend MyDistance operator +(const MyDistance& a, const MyDistance& b){
        return MyDistance(a.m + b.m);
      }
      friend MyDistance operator -(const MyDistance& a, const MyDistance& b){
        return MyDistance(a.m - b.m);
      }

      friend std::ostream& operator<< (std::ostream &out, const MyDistance& myDist){
        out << myDist.m << " m";
         return out;
      }
    private:
      double m;

  };

  namespace Unit{
    MyDistance operator "" _km(long double d){
      return MyDistance(1000*d);
    }
    MyDistance operator "" _m(long double m){
      return MyDistance(m);
    }
    MyDistance operator "" _dm(long double d){
      return MyDistance(d/10);
    }
    MyDistance operator "" _cm(long double c){
      return MyDistance(c/100);
    }
  }
}

using namespace Distance::Unit;

int main(){

  std:: cout << std::endl;

  std::cout << "1.0_km: " << 1.0_km << std::endl;
  std::cout << "1.0_m: " << 1.0_m << std::endl;
  std::cout << "1.0_dm: " << 1.0_dm << std::endl;
  std::cout << "1.0_cm: " << 1.0_cm << std::endl;


  std::cout << std::endl;
  std::cout << "1.0_km + 2.0_dm +  3.0_dm - 4.0_cm: " << 1.0_km + 2.0_dm +  3.0_dm - 4.0_cm <
  std::cout << std::endl;

}
```



You can find the solution to these tasks in the next lesson.