```c
// J Hundley
// assign02b
// Jan 10, 2012
// PART a: Input height and weight then compute and display bmi.
// PART b: Input a target bmi and computer the target weight.

#include <stdio.h>

    int main()
   {
      double inches, pounds,    // input
             meters, kilograms, // calculated values
             bmi;               // output

   // Prompt the user to enter a value for weight in pounds and height in inches
      printf("Enter the height in inches: ");
      scanf("%lf", &inches);
      printf("Enter the weight in pounds: ");
      scanf("%lf",&pounds);

   // Compute conversions
      meters = inches * 0.0254;
      kilograms = pounds / 2.2046;

   // Calculate

      bmi = kilograms /(meters * meters);

   // display BMI
      printf("The BMI is: %f\n\n", bmi);

   // Prompt the user to enter a value for BMI
      printf("Enter the target BMI: ");
      scanf("%lf", &bmi);

   // compute weight
      kilograms = bmi * meters * meters;
   // Compute conversions
      pounds = 2.2046 * kilograms;
   // display weight
      printf("The target weight is: %f\n", pounds);

      return 0;
   }
```

```c
// J Hundley
// assign02b
// March 2, 2012
// PART a: Input height and weight then compute and display bmi.
// PART b: Input a target bmi and computer the target weight.

#include <stdio.h>

// FUNCTION PROTOTYPES ============================================
   double getInches();
   double getPounds();
   double getTargetBmi();
   double inches2meters( double inches );
   double pounds2kg( double pounds );
   double kg2pounds( double kg );
   double computeBmi( double kg, double meters );
   double weightForBmi( double bmi, double meters );

    int main()
   {
      double inches, pounds,    // input
             meters, kilograms, // calculated values
             bmi;               // output

   // Prompt the user to enter a value for weight in pounds and height in inches
   // get user information within ranges
      inches = getInches();
      pounds = getPounds();

   // Compute conversions
      meters = inches * 0.0254;
      kilograms = pounds / 2.2046;

   // Calculate
      bmi = computeBmi( kilograms, meters );

   // display BMI
      printf("The BMI is: %f\n\n", bmi);

   // Prompt the user to enter a value for BMI
      printf("Enter the target BMI: ");
      scanf("%lf", &bmi);

   // compute weight
      kilograms = weightForBmi( bmi, meters );
   // Compute conversions
      pounds = 2.2046 * kilograms;
   // display weight
      printf("The target weight is: %f\n", pounds);

      return 0;
   }
```

```
// FUNCTION PROTOTYPES ============================================================
// THE GET FUNCTIONS==============================================================
// get the inches
    double getInches()
   {
      double inches;
   // While not a good height, prompt the user to enter a value for height in inches
      do
      {
         printf("Enter the height in inches(59-78): ");
         scanf("%lf", &inches);
      } while ( inches < 59.0 || inches > 78.0 );
      return inches;
   }
// get the pounds
    double getPounds()
   {
      double pounds;
     // While not a good weight, prompt the user to enter a value for weight in poundss
      do
      {
         printf("Enter the weight in pounds(90-350): ");
         scanf("%lf", &pounds);
      }while ( pounds < 90.0 || pounds > 350.0 );
      return pounds;
   }
// get target BMI
    double getTargetBmi()
   {
      double bmi;
     // While not a good bmi, prompt the user to enter a value for BMI.
      do
      {
         printf("Enter the target BMI(18.5-30.0): ");
         scanf("%lf", &bmi);
      }while ( bmi < 18.5 || bmi > 30.0 );
      return bmi;
   }
// THE CONVERIONS FUNCTIONS ======================================================
// convert inches to meters
    double inches2meters( double inches )
   {
      return inches * 0.0254;
   }
// convert pounds to kilograms
    double pounds2kg( double pounds )
   {
      double kilograms;
      kilograms = pounds / 2.2046;
      return kilograms;
   }
// convert kilograms to pounds
    double kg2pounds( double kg )
   {
      return 2.2046 * kg;
   }
```

```
// THE COMPUTATION FUNCTIONS ========================================================
// compute BMI
    double computeBmi( double kg, double meters )
   {
      return kg /(meters * meters);
   }
// compute the target weight
    double weightForBmi( double bmi, double meters )
   {
      double kilograms;
      kilograms = bmi * meters * meters;
      return kilograms;
   }
```