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ASSIGNMENT-3

1. *Problem 1 solution*

```
CLASS PhoneBill
BEGIN

    METHOD MAIN
    BEGIN

      READ the input_value for account number and service code
      from the user

      acc_no ← input_value for account number
      service_code ← input_value for the type of service

      PRINT  Account Number:  acc_no
      PRINT  Service Code:  service_code

       FOR (service_code==r OR R)

          READ input_value for the number of minutes from the
          user

          minutes←input_value for the number of minutes

          IF ( minutes<=50) THEN

             fee ←15.00

         ELSE
```

```
        fee ←15.00+(minutes-50)*0.50

      END IF

      PRINT Amount due:  fee

  END FOR

FOR (service_code==p OR P)

   READ input_value from the user for the number of minutes
  in daytime and nighttime

   daytime_minutes← input_value for the number of  minutes
                    talked between 6:00am to 6:00pm

 nighttime_minutes←input_value for the number of minutes
                    talked between 6:00pm to 6:00am.

    PRINT Daytime minutes:  daytime_minutes
   PRINT Nighttime_minutes:  nighttime_minutes

    FOR (daytime_minutes)

      IF (daytime_minutes<=50) THEN

          fee←0.00
      ELSE
          fee←(daytime_minutes – 50)*0.20
      END IF
   END FOR
```

```
        FOR (nighttime_minutes)

            IF (nighttime_minutes<=100) THEN

                fee←0.00
            ELSE
                fee←(nighttime_minutes – 100)*0.10
            END IF
        END FOR

        PRINT Amonut due:  fee

    END FOR
  END MAIN
END PhoneBill
```

2. CLASS BestDeal
   BEGIN

   METHOD MAIN
   BEGIN

   READ the input_value for the price and weight of two boxes from the user

   small_weight ← input_value of small weight
   small_price ← input_value of small price
   large_weight ← input_value of large weight
   large_price ← input_value of large price

```
        PRINT  Small box weight:   small_weight
        PRINT  Small box price:  small_price
        PRINT  Large box weight:  large_weight
        PRINT  Large box price:  large_price

      IF ((small_weight)*2 <= large_weight &&
          (small_price)*2 > large_price) THEN

            PRINT  Judgment: The large box is a better deal
       ELSE IF((small_weight)*2 >= large_weight &&
          (small_price)*2 < large_price)

            PRINT  Judgment: The smaller box is a better deal
       ELSE
            PRINT  Judgment: Both boxes are of same value
      END IF

   END MAIN

END BestDeal
```

3. CLASS Circles
   BEGIN

```
      METHOD MAIN
      BEGIN

         READ the input_values for the coordinates of center of
         two circles and the radius of those circles

         X1 ← x- coordinate of circle 1
         X2 ← x- coordinate of circle 2
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Y1 ← y-coordinate of circle 1
Y2 ← y-coordinate of circle 2
R1 ← radius of circle 1
R2 ← radius of circle 2

 PRINT  Circle 1 center is: (X1,Y1)
 PRINT  Circle 1 radius is:  R1
 PRINT  Circle 2 center is: (X2,Y2)
 PRINT  Circle 2 radius is:  R2

 sum_radius ← R1 + R2
 distance_center ← ((X2 – X1)^2 + (Y2 – Y1)^2)^1/2

  IF (R2 >=R1 )
       IF(distance_center <= (R2 – R1))
       PRINT  Judgment:  Circle 1 is completely outside
                         Circle 2
  ELSE IF( R1>=R2 )
      IF(distance_center <=(R1 – R2))
      PRINT  Judgment: Circle 2 is completely inside
                         Circle 1
  ELSE IF (distance_center > sum_radius)
       PRINT Judgment: Circle 2 is completely outside
                         Circle 1
  ELSE
      PRINT Judgment: Circle 2 overlaps Circle 1
  END IF

    END MAIN

END BestDeal
```

4. CLASS IncomeTax
   BEGIN

```
        METHOD MAIN
        BEGIN

          READ input_value for the annual income from the user
          annual_income ← input_value from the user
          PRINT  Annual Income:  annual_income

          IF (annual_income <= 50000)
                PRINT  Tax Bracket:  5%
                tax ← (5/100)*annual_income
                PRINT Tax due amount:  tax

          ELSE IF (annual_income > 50000 && annual_income
                      <= 200000)
                PRINT  Tax Bracket: 10%
                tax ← (10/100)*annual_income
                PRINT  Tax due amount:  tax

           ELSE IF (annual_income > 200000 && annual_income
                      <= 400000)
                PRINT  Tax Bracket: 15%
                tax ← (15/100)*annual_income
                PRINT  Tax due amount:  tax

           ELSE IF (annual_income > 400000 &&   annual_income
                      <= 900000)
                PRINT  Tax Bracket: 25%
                tax ← (25/100)*annual_income
                PRINT  Tax due amount:  tax
```

```
        ELSE
            PRINT  Tax Bracket: 35%
            tax ← (35/100)*annual_income
            PRINT  Tax due amount:  tax
        END IF

    END MAIN
END IncomeTax
```

5. CLASS FiveDigitPalindrome
   BEGIN

```
        METHOD MAIN
        BEGIN

            READ input_value for a number from the user
            num ←input_value for a number
            PRINT  Entered number:  num
            reverse_num ←num
            sum ←0

            WHILE (num > 0)
                rem ←num%10
                sum←sum + rem
                num=num/10
            END WHILE

            IF (sum == reverse_num)
                PRINT  Judgment:   Valid 5-digit palindrome
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```
        ELSE IF (sum !=reverse_num)
            PRINT   Judgment: Invalid 5-digit palindrome

        ELSE
            PRINT   Judgment: Invalid 5-digit number. Try again
        END IF

    END MAIN
END FiveDigitPalindrome
```