Lösung **BodyMassIndex2.om** Blatt 11

```
MODULE BodyMassIndex2;

        (***************************
         * Allgemeine Informatik I *
         *      WS 2001/2002       *
         *     Uebungsblatt 11     *
         *     Beispielloesung     *
         ***************************)

IMPORT Read, Write, Print;

CONST MaxDataSize = 10;

TYPE Date = RECORD
              day, month, year : INTEGER;
            END;
     File = RECORD
              name           : ARRAY 24 OF CHAR;
              dateofbirth    : Date;
              height, weight : INTEGER;
              bmi            : REAL;
            END;
     DataSet = ARRAY MaxDataSize OF File;

VAR data              : DataSet;
    count             : INTEGER;
    min, max, average : REAL;


  PROCEDURE ReadData(VAR data : DataSet; VAR maxelem : INTEGER);
    (* Reads all data files and stores them in a ARRAY of TYPE DataSet *)
  VAR choice : ARRAY 2 OF CHAR;
      i      : INTEGER;
      dummy  : CHAR;
  BEGIN
  choice[0]:="j"; choice[1]:=0X;
  i:=0;
  WHILE ((choice[0]="j") & (i < MaxDataSize)) DO
    Print.F1("Bitte den Namen des %d. Patienten eingeben : ",i+1);
    Read.Line(data[i].name);
    Print.F("Bitte das Geburtsdatum eingeben [dd.mm.yyyy] : ");
    Read.Int(data[i].dateofbirth.day);
    Read.Char(dummy);
    Read.Int(data[i].dateofbirth.month);
    Read.Char(dummy);
    Read.Int(data[i].dateofbirth.year);
    Read.Ln;
    Print.F("Bitte die Koerpergroesse angeben [cm] : ");
    Read.Int(data[i].height);
    Print.F("Bitte das Gewicht angeben [kg] : ");
    Read.Int(data[i].weight);
    Read.Ln;
      (* calculate BMI *)
    data[i].bmi:=data[i].weight/((data[i].height/100)*(data[i].height/100));
    Print.F("Noch einen Datensatz einlesen? [j/n] ");
    Read.Line(choice);
    INC(i);
    END;
  maxelem:=i;
  END ReadData;
```

Lösung **BodyMassIndex2.om** Blatt 11

```
  PROCEDURE GetAverage(data : DataSet; maxelem : INTEGER) : REAL;
    (* Calculates the average BMI *)
  VAR i       : INTEGER;
      average : REAL;
  BEGIN
  i:=0;
  average:=0;
  WHILE (i < maxelem) DO
    average:=average+data[i].bmi;
    INC(i);
    END;
  RETURN(average/maxelem);
  END GetAverage;


  PROCEDURE GetMaximum(data : DataSet; maxelem : INTEGER) : REAL;
    (* Calculates the maximum BMI *)
  VAR i   : INTEGER;
      max : REAL;
  BEGIN
  i:=0;
  max:=data[0].bmi;
  WHILE (i < maxelem) DO
    IF (data[i].bmi > max) THEN max:=data[i].bmi END;
    INC(i);
    END;
  RETURN(max);
  END GetMaximum;


  PROCEDURE GetMinimum(data : DataSet; maxelem : INTEGER) : REAL;
    (* Calculates the minimum BMI *)
  VAR i   : INTEGER;
      min : REAL;
  BEGIN
  i:=0;
  min:=data[0].bmi;
  WHILE (i < maxelem) DO
    IF (data[i].bmi < min) THEN min:=data[i].bmi END;
    INC(i);
    END;
  RETURN(min);
  END GetMinimum;


  PROCEDURE PrintData(data : DataSet; maxelem : INTEGER);
    (* Prints the whole data set using the Oberon Module Print *)
  VAR i : INTEGER;
  BEGIN
  i:=0;
  WHILE (i < maxelem) DO
    Print.F7("  %-24s - %02d.%02d.%4d - %3dcm - %2dkg - BMI %5.2f\n",data[i].nam
e,data[i].dateofbirth.day,data[i].dateofbirth.month,data[i].dateofbirth.year,dat
a[i].height,data[i].weight,data[i].bmi);
    INC(i);
    END;
  END PrintData;


BEGIN
  (* Read all data *)
ReadData(data,count);
```

Lösung **BodyMassIndex2.om** Blatt 11

```
  (* Get minimum, maximum and average *)
min:=GetMinimum(data,count);
max:=GetMaximum(data,count);
average:=GetAverage(data,count);

  (* Print results *)
Write.Ln;
Print.F("Patientendaten:\n");
PrintData(data,count);
Write.Ln;
Print.F("Statistische Auswertung:\n");
Print.Fl("  Minimaler BMI     : %5.2f\n",min);
Print.Fl("  Maximaler BMI     : %5.2f\n",max);
Print.Fl("  Durchschnitts-BMI : %5.2f\n",average);

END BodyMassIndex2.
```