

Question 1 / Vraag 1

```

program multi_choice ;

Uses Crt ;

type
  info= record
    name : string[30] ;
    answers : string[15] ;
    perc : real ;
  end ;
var
  datafile : file of info ;
  onerec : info ;
  correct : string[15] ;
  i : integer ;
  total : real ;

begin
  clrscr ;
  correct := 'BADEECBEEBABBBCD' ;
  assign(datafile, 'result.dat') ;
  reset(datafile) ;
  while not eof(datafile) do
  begin
    read(datafile, onerec) ;
    with onerec do
    begin
      total := 0 ;
      for i := 1 to 15 do
      begin
        if answers[i] = correct[i] then
          total := total + 2
        else if answers[i] <> ' ' then
          total := total - 1 ;
        end ;
      perc := total / 30 * 100 ;
      end ;
      seek(datafile, filepos(datafile) - 1) ;
      write(datafile, onerec) ;
    end; {while not eof}

    reset(datafile) ;
    writeln('NAME','PERCENTAGE':40) ;
    while not eof(datafile) do
    begin
      read(datafile, onerec) ;
      with onerec do
        writeln(name,' ':20 - length(name),perc:24:2) ;
      end ; {while not eof}

      close(datafile) ;
      readln ;
    end.

```

Type declaration of record / Type-verklaring van rekord	3
File variables / Lêerveranderlikes	2
Save correct answer in string / Stoor korrekte antwoord in 'n string	2
Open datafile / Maak data lêer oop	2
Read every record in datafile (while) / Lees elke rekord in die data lêer (while)	1
Read record from file (read) / Lees rekord uit lêer (read)	1

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Check every answer / Vergelyk elke antwoord	2
Add two marks for correct answer / Tel twee punte by vir 'n korrekte antwoord	1
No marks for space / Geen punte vir spasie	1
Subtract one mark for wrong answer / Trek een punt af vir verkeerde antwoord	1
Calculate percentage / Bereken persentasie	2
Move file pointer back one position / Skuif lêerwyser een posisie terug	2
Write changed record back to file / Skryf veranderde rekord terug na lêer	2
Begin lêer weer van voor af lees	1
Display heading / Vertoon opskrif	1
Lees alle rekords uit lêer (while en read)	2
Display name and surname / Vertoon naam en van	1
Display % / Vertoon %	1
Display in columns / Vertoon in kolomme	1
Close datafile / Sluit datalêer	1
TOTAL / TOTAAL	30

Question 2 / Vraag 2

```

program change_poem ;

Uses Crt ;

var
  poemfile : text ;
  oneline : string[80] ;
  oldword, newword : string[10] ;
  where : integer ;
  ans : char ;

BEGIN
  clrscr ;
  assign(poemfile, 'epoem.txt') ;

  write('Do you want to change a word? ') ;
  readln(ans) ;
  while Ucase(ans) = 'Y' do
  begin
    reset(poemfile) ;
    write('Old word: ') ;
    readln(oldword) ;

    write('New word: ') ;
    readln(newword) ;

    while not eof(poemfile) do
    begin
      readln(poemfile, oneline) ;
      where := pos(oldword, oneline) ;
      while where <> 0 do
      begin
        delete(oneline, where, length(oldword)) ;
        insert(newword, oneline, where) ;
        where := pos(oldword, oneline) ;
      end ;
      writeln(oneline) ;
    end ; {while}
  end ; {While ans = 'Y'}
  close(poemfile) ;
  readkey ;
END.

```

Verklaar tekslêer	1
Verklaar string om reël uit lêer te lees	1
Maak lêer oop (assign & reset)	2
Toets herhaaldelik vir 'n woord (Delphi – Button)	2
Lees ou en nuwe woord	2
Lees alle stringe in lêer (while)	2
Readln om te lees	1
Bepaal posisie van woord	2
Soek alle voorkomste van woord	2
Skrap ou woord	2
Voeg nuwe woord regte posisie in	2
Vertoon reël op skerm	2
Close lêer	1
TOTAAL	22

Question 3 / Vraag 3

```
program mix_students ;

Uses crt ;

type
  tLearners = array[1..20] of integer ;

procedure display(numbers : tLearners ; howmany: integer) ;
var
  i : integer;
begin
  for i := 1 to howmany do
    write(numbers[i], ' ');
  writeln ;
end ;

procedure shuffle(VAR numbers : tLearners ; howmany: integer) ;
var
  iTimes, val1, val2 : integer ;
  temp : integer ;
begin
  for iTimes := 1 to 5 do
    begin
      val1 := Random(howmany) + 1 ;
      repeat
        val2 := Random(howmany) + 1 ;
      until val2 <> val1 ;
      {Swop names}
      temp := numbers[val1] ;
      numbers[val1] := numbers[val2] ;
      numbers[val2] := temp ;
    end ; {for}
  end ; {shuffle}

var
  arrLearners : tLearners ;
  iCount : integer ;
  cAns : char ;

BEGIN
  for iCount := 1 to 20 do
    arrLearners[iCount] := iCount ;

  display(arrLearners, 20) ;

  Write('Do you want to shuffle numbers? <Y/N> ') ;
  readln(cAns) ;
  while UpCase(cAns) = 'Y' do
    begin
      shuffle(arrLearners, iCount) ;
      display(arrLearners, iCount) ;
      Write('Do you want to shuffle numbers? <Y/N> ') ;
      readln(cAns) ;
    end ;

  ReadKey ;

END.
```

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Verklaar skikking 20 syfers	2
Stoor 20 syfers in skikking	2
Vra of nommers wil skommel (write & readln) (Delphi Button)	2
Skommel herhaaldelik	2
Roep prosedure om te skommel	1
Roep prosedure om te vertoon	1
prosedure om name te vertoon	
parameteroordrag skikking (1) aantal (1)	2
vertoon alle name (1) langs mekaar(1)	2
prosedure om te ruil	
parameteroordrag VAR (1) skikking (1) aantal (1)	3
ruil 5 keer	1
random produseer getal tussen 1 en aantal name	2
tweede random getal nie dieselfde as eerste	2
ruil suksesvol	3
TOTAAL	25

Question 4 / Vraag 4

```
program concert_seats ;

Uses crt ;

const
  maxcol = 12 ;
  maxrow = 14 ;
  maxseat = maxcol * maxrow ;

type
  seat_arr = array[1..maxrow, 1..maxcol] of integer ;

var
  seats : seat_arr ;
  row, col, ticket: integer ;

procedure display(numrows, numcols : integer ; arr : seat_arr) ;
var
  c, r : integer ;
begin
  {Display values on screen}
  write(' ');
  for c := 1 to numcols do
    write(c:5) ;
  writeln ;
  for r := 1 to numrows do
  begin
    write(r:3, ' ');
    for c := 1 to numcols do
    begin
      write(' ',seats[r,c]:4) ;
    end ;
    writeln ;
  end ; {for row}
end ; {display}

procedure readvalue(iLow, iHigh : integer ; VAR result : integer) ;
begin
  repeat
    readln(result) ;
    if NOT (result IN [iLow..iHigh]) then
      write('Enter value between ',iLow,' and ',iHigh,' : ') ;
  until result IN [iLow..iHigh] ;
end ;
```

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begin
  clrscr ;
  display(maxrow, maxcol, seats);
  write('Ticket number <1..',maxseat,'> <0> to stop: ') ;
  readln(ticket) ;
  while ticket <> 0 do
  begin
    repeat
      write('Row number <1..', maxrow,'>: ') ;
      readvalue(1, maxrow, row) ;
      write('Seat number <1..',maxcol,'>: ') ;
      readvalue(1, maxcol, col) ;
      if seats[row, col] <> 0 then
      begin
        writeln('Seat occupied - re-enter') ;
      end ;
    until seats[row, col] = 0 ;
    seats[row,col] := ticket ;
    display(maxrow, maxcol, seats);
    write('Ticket number <1..',maxseat,'> <0> to stop: ') ;
    readln(ticket) ;
  end ;    {while ticket <> 0}
  clrscr ;
  writeln('The final seat arrangement is: ') ;
  display(maxrow, maxcol, seats) ;
  readln ;
end.

```

Turbo Pascal		Delphi
Verklaar skikking	2	Colcount =13 RowCount = 15 vir StringGrid
lees kaartjienommer	1	
herhaal totdat kaartjienommer = 0	2	Image en Label op vorm
Lees ry-en sitpleknommer (roep-stelling)	1	
Gebruikersvriendelike boodskappe (grense)	1	
Toets of sitplek beskikbaar	1	
Boodskap indien sitplek nie beskikbaar	1	
Herhaal totdat oop sitplek gekies is	2	
Bespreek sitplek	2	
Vertoon sitplekke (plek waar prosedure geroep word)	2	StringGrid komponent ingevul op regte plek
Vertoon sitplekbespreking	5	Kode om ry en kolomnommers te vertoon in <i>OnActivate Event handler</i> van vorm
Prosedure om ry en kolomnommer te lees en valideer	6	
TOTAL / TOTAAL	26	