Gauteng Department of Education
Computer Studies HG 2002/2003 Paper 1
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POSSIBLE ANSWERS FOR:

Question / Vraag 1

/20

```
program vraag1_memo ;
Uses crt ;

type          ✓
     rec_type = record
        monthname : string[13] ;
        pollute : array[1..4] of real;
     end ;

var
   yearfile : file of rec_type ; ✓
   onemonth : rec_type ; ✓
   monthnum, i : integer ;
```

3

```
BEGIN
 assign(yearfile, 'Y2002.DAT'); ✓
 reset(yearfile) ; ✓

 repeat
   repeat
     write('Enter month number <1..12> <0> to stop ');
     readln(monthnum); ✓
     IF NOT (monthnum IN [0..12]) then✓          ✓
        writeln('Number should be between 1 and 12');

   until monthnum IN [0..12]; ✓
```

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```
    if monthnum <> 0 then✓
     begin
       clrscr ;
       seek(yearfile, monthnum - 1); ✓✓
       read(yearfile, onemonth); ✓

       with onemonth do✓
        begin                          ✓
          writeln(monthname,' ':10-length(monthname),'Pollute':10) ;

          for i := 1 to 4 do✓
            writeln(i,' ':9,pollute[i]:10:2); ✓ in columns✓

        end ;    {with}
     end ;   {if}

   until monthnum = 0 ; ✓
   close(yearfile); ✓
END.
```

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Variasies:

If (monthnum > 12) or (monthnum <=0)
4 writeln's i.p.v. for
Buitenste repeat vervang met while: Dan is die monthnum <> 0 onnodig,
punt gaan vir inisialisering van die veranderlike van die while.
Geen seek-stelling, lees elke rekord uit leer, moet dan 'n vlag hê vir 2 punte

Question / Vraag 2.1

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```
program vr2amemo ;

type
    str_20 = string[20] ;
var
  bad_file : file of str_20 ; ✓
  oneword : str_20 ; ✓

begin
     assign(bad_file,'badword.dat'); ✓✓
     reset(bad_file) ; ✓
     while not eof(bad_file) do✓
     begin✓
        read(bad_file, oneword) ; ✓
        writeln(oneword) ; ✓
     end ;
     readln ;
     close(bad_file) ; ✓
end.
```

Question / Vraag 2.2

/20

```
program teksmanipuleer_X ;
Uses crt ;
type
    str_20 = string[20] ;

var
   ill_words : file of str_20 ;
   nonoword  : str_20 ; ✓

   readin  : string ;
   oneword : string ;
   blank   : integer ;

begin
  clrscr ; ✓
  assign(ill_words, 'nonos.dat') ; ✓✓
  reset(ill_words) ; {nie nodig, later nodig}
```

3

```
  write('Enter a sentence <X> to stop: ') ;
  readln(readin) ; ✓
  while (readin <> 'x') and (readin <> 'X') do✓   of in ['x','x']
  begin✓
     writeln('Illegal words used') ; ✓
```

3

```
readin := readin + ' ';
while readin <> '' do ✓
begin
   blank := pos(' ',readin) ; ✓        ✓
   oneword := copy(readin, 1, blank - 1);
   delete(readin, 1, blank) ; ✓
```

Test words in sentence

4

```
    reset(ill_words) ; ✓ ✓ (plek)
    while NOT EOF(ill_words) do✓
    begin
       read(ill_words, nonoword) ;✓
```

Test every word in file

4

```
            if oneword = nonoword then✓
               writeln(oneword) ;✓
         end ;    {while not eof..}
      end ;    {while readin <> ''}

      writeln ;
      write('Enter a sentence <X> to stop: ');
      readln(readin) ; ✓
   end ;

   close(ill_words) ; ✓
   writeln('<Enter> to stop') ;
   readln ;
end.
```

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ALTERNATIVE / ALTERNATIEWE **Question / Vraag 2.2**

```
program teksmanipuleer_X;

Uses crt ;

type
    str_20 = string[20];

var
   ill_words : file of str_20;
   readin    : string;
   oneword   : string;
   nonoword  : str_20; ✓
   where     : integer;

begin
  clrscr ; ✓
  assign(ill_words, 'badword.dat') ; ✓✓
  reset(ill_words) ;
{In case user types X first time. If file is not
open the close statement will produce an error message.}

  write('Enter a sentence <X> to stop: ') ;
  readln(readin) ; ✓
  while (readin <> 'x') and (readin <> 'X') do✓
  begin✓
     writeln('Illegal words used') ; ✓

        reset(ill_words) ; ✓✓(plek)
        while NOT EOF(ill_words) do✓
        begin✓
           read(ill_words, nonoword) ; ✓
           if pos(nonoword, readin) <> 0 then✓✓✓✓✓
              writeln(nonoword) ; ✓
        end ;   {while not eof..}

     writeln ;
     write('Enter a sentence <X> to stop: ') ;
     readln(readin) ; ✓
  end ;

  close(ill_words) ; ✓
end.
```

Question / Vraag 3

/25

Question / Vraag 3.1

```
program Vraag3_memo ;

Uses Crt, manip ; ✓
var
   passwrd : string;  {of string[5]}
   c       : char ;
```

1

```
BEGIN
   clrscr ;              ✓
   write('Enter password: <X> to stop ') ;
   passwrd := read_password ; ✓✓
```

3

```
   ✓
[  while (passwrd <> 'X') AND (passwrd <> 'x') do✓
[  begin

      if length(passwrd) > 5 then ← onnodig, kan net copy of string[5]
        passwrd := copy(passwrd, 1, 5) ; ✓

      replace_char(passwrd,'1','l') ; ✓✓
      replace_char(passwrd,'0','o') ; ✓ ✓

   ✓ for c := '2' to '9' do✓
        delete_char(passwrd,c) ; ✓
```

10

```
      if length(passwrd) <> 0 then✓
         writeln('Your valid password is: ',passwrd) ✓
      else
         writeln('No legal characters used, re-enter password') ; ✓


      write('Enter password: <X> to stop ') ;
      passwrd := read_password ;
   end ;   {while}
END.
```

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Variasies:

Geen for - 2 uit 3

Geen onderste invoer - penaliseer

For kan met getalle werk, moet dan na getal na string omskakel.

Question / Vraag 3.2

```
{*************************************************************************}
Function read_password : string ;
{*************************************************************************}
var
   c     : char ; ✓
   temp : string ;

begin
   temp := '' ; ✓
   c := ReadKey  ; ✓

   while ord(c) <> 13 do✓
   begin
      temp := temp + c ; ✓
      write('*') ; ✓
      BEEP ; ✓
      c := ReadKey ;
   end ;

   writeln ;
   read_password := temp ; ✓
end ;
```

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Question / Vraag 4

/25

2

```
program soccer_team ;
Uses crt ;
type
   win_arr = array[1..6, 1..6] of string[7] ;
   names_arr = array[1..6] of string[7] ; ✓
   numwins_arr = array[1..6] of integer ; ✓

(*
  const names : names_arr = ('Rams','Bulls','Bears',
                             'Tigers','Zebras','Rhinos') ;
                          {alternative method to create an array of names}*)
var
    win         : win_arr ;
    data        : text ;
   row, col, star, team : integer ;
   oneline     : string ;
    names     : names_arr ;
    numwins : numwins_arr ;
begin
clrscr ;
{Data from text file into two-dimensional array}
assign(data ,'soccer.txt') ;
reset(data) ;
for row := 1 to 6 do
begin
  readln(data, oneline) ;
  for col := 1 to 6 do
  begin
    star := pos('*', oneline) ;
```

```
      win[row, col] := copy(oneline, 1, star - 1) ;
      delete(oneline, 1, star);
    end ;
  end ;
  close(data) ;
```

{Place team names in a one-dimensional array} ✓✓

```
  names[1] := 'Rams' ; names[2] := 'Bulls' ; names[3] := 'Bears';
  names[4] := 'Tigers' ; names[5] := 'Zebras' ;
  names[6] := 'Rhinos' ;
```

2

{Display team names in two-dimensional array on screen}

```
  Textcolor(green) ; ✓
  write(' ':9) ; ✓
  for row := 1 to 6 do ✓
     write(names[row]:9) ;✓     {Must be write}
  writeln ; ✓
```

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```
  for row := 1 to 6 do✓
  begin
     Textcolor(green) ; ✓
     write(names[row]:9) ;✓
     Textcolor(blue) ;
     for col := 1 to 6 do✓
        write(win[row, col]:9) ; ✓✓
     writeln ; ✓
  end ;
  writeln ;
```

7

{Calculate the number of games each team won}

```
  for team := 1 to 6 do
     numwins[team] := 0 ;
```

(Method 1: The complete 2-dim array is searched for every team*

```
  for team := 1 to 6 do✓
     for row := 1 to 6 do✓

        for col := 1 to 6 do✓
           if names[team] = win[row, col] then✓✓
              numwins[team] := numwins[team] + 1 ; ✓ *)
```

6

(Method 2: Only the relevant row and column is searched for every team *)*

```
  for row := 1 to 6 do✓
    for col := 1 to 6 do✓
     begin
        if (win[row,col] = names[row]) then
             numwins[row] := numwins[row] + 1 ; ✓✓
        if (win[col,row] = names[row]) then
             numwins[row] := numwins[row] + 1 ; ✓✓
     end ;
```

{Display team names and number of wins on screen}

```
  for team := 1 to 6 do✓
     writeln(names[team]:8,numwins[team]:4) ; ✓✓
```

3

```
  readln ;
end.
```

```
{-------------------------------------------------------}
{ V R A A G : 4                                         }
{-------------------------------------------------------}
Uses crt ;
type
   win_arr = array[1..6, 1..6] of string[7] ;
var
   win              : win_arr ;
   data             : text ;
   row, col, star   : integer ;
   oneline          : string ;

   k                : byte;

   spanne           : array [1..6] of string[7];   ✓
   gewen            : array [1..6] of byte; ✓
{-------------------------------------------------------}
{Skep'n een-dim skikking met die name van die 6 spanne.}
{-------------------------------------------------------}

const
spanne  : array[1..6] of string[7] ✓
       = ('Rams','Bulls','Bears','Tigers','Zebras','Rhinos');✓

begin
end;


{-----------------------------------------}
begin
  for k := 1 to 6 do  ✓
  begin
    write ('Naam van span ', k, ' : ');
    readln (spanne[k]); ✓
  end ;
end ;


{-----------------------------------------}
begin              ✓  ✓
 spanne[1] :='Rams';   spanne[2] :='Bulls';  spanne[3] :='Bears';
 spanne[4] :='Tigers'; spanne[5] :='Zebras'; spanne[6] :='Rhinos';
end;

{-------------------------------------------------------}
{Vertoon inhoud van die twee-dim skikking op die skerm  }
{-------------------------------------------------------}
    clrscr;
✓   TEXTCOLOR (yellow);
✓   write ('':9);
✓   for k := 1 to 6 do
✓     write (spanne[k], '':9 - length(spanne[k]));
✓   writeln;

✓   for row := 1 to 6 do
  begin
✓     TEXTCOLOR (yellow);
✓     write (spanne[ROW], '':9 - length(spanne[ROW]));
      TEXTCOLOR (white);
✓     for col := 1 to 6 do
✓       write (win[row, col], '': 9 - length(win[row, col]));
✓     writeln;
   end ;
```

2

2

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```
{-------------------------------------------------------}
{Bereken die aantal wedstryde wat elke span gewen het.}
{-------------------------------------------------------}
✓  for k := 1 to 6 do
✓   for row := 1 to 6 do
✓    for col := 1 to 6 do
✓✓       if win[row,col] = spanne[k]
✓         then INC (gewen[k]);

{-------------------------Only the relevant row and column }
{-------------------------------is searched for every team }
✓  for row := 1 to 6 do
✓    for col := 1 to 6 do
   begin
✓✓     if win[row,col] = spanne[row] then INC (gewen[k]);
✓✓     if win[col,row] = spanne[row] then INC (gewen[k]);
    end ;

{-------------------------------------------------------}
{Vertoon die spanne se name en aantal wedstryde gewen -skerm.}
{-------------------------------------------------------}
   writeln ;
✓  for k := 1 to 6 do
✓✓   writeln (spanne[k], '':9 - length(spanne[k]), gewen[k]);
   WRITELN ;
   writeln('Druk <enter> om voort te gaan.') ;
✓  readln ;
```

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