Introduction

While the game's ancient origins are unclear, some historians believe the Roman game of Paganica spread as they conquered much of Europe during the 1st century BC, eventually evolving into the modern game. Others cite Chiwan played in the Ming Dynasty (13688-1644) and introduced to Europe during the Middle Ages. Another contender is Apocryphally, where the Dutch played a game with a stick and leather ball. The winner was whoever hit the ball with the fewest strokes into a target several hundred yards away.

However, it is generally accepted that the modern game of Golf was developed in Scotland from the Middle Ages onwards. The game gained international popularity in the late 19th century when it spread across the rest of the UK and to the then British Empire and United States.

Computer Golf Games

The first Golf platform game was released in 1979 and appropriately for the first commercial home video games console the Magnavox Odyssey. The Game Leaderboard was released in 1986 for the Amiga, Amstrad, Commodore 64, ZX Spectrum and featured four different water-based courses. Nintendo released Grand Slam in 1991 and Greg Norman’s Golf Power in 1992.

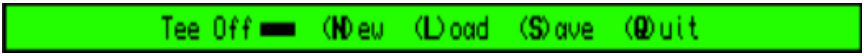
As computing power expanded Golf games became more graphically sophisticated as with the PGA Tour Golf games. In 2002 SimGolf challenged players to design their own Golf courses and play them with the in-built PGA pro, Gary Golf.

QBITS Golf Concepts

This began with the decision to create an 18 Hole Golf course with Fairways of varying lengths and difficulty. Graphics to show Power and Direction applied to a Club Drive or Putt. The Fairway created in sections with direction changes and bordered with Trees and Rough ground to the side. Some Fairways to have a Lake and each Green bordered with Bunkers. Then a Wind Speed / Direction indicator used in the calculations of a new ball position.

QBITS Golf Welcome Screen & Menu

Opening screen uses Background and image graphics to introduce the QBITS Golf Game with options for starting a **NEW** game or **LOAD** a previously Saved one or simply **Quit!**



Use the Spacebar to **Tee Off** which will present a new Fairway, but only after a (**N**)ew or (**L**)oad has been triggered. (**S**)ave likewise is inactive until at least one hole has been played. Use (**Q**)uit to leave the Game. Save and Load allows return to the Game at a later time to complete the 18-hole course.

QBITS Golf Wind Speed/Direction

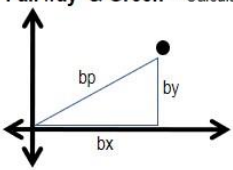
The Wind Speed/Direction indicator is based on a simple eight-point compass design. The current direction shown in Red the others in Cyan (Green) with the Speed printed in the centre.

QBITS Golf Power & Direction

Club Power is graphically presented as a Slider raised and lowered by the Up/Down Cursors. The direction is shown by a rotating bar within an Ellipse below the Golfers feet and changed with Left/Right Cursors. To action the selected Power & Direction press Spacebar.

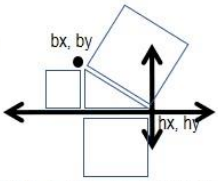
Distance is calculated as a ratio between Power and Fairway length. This is then used to evaluate ball position bx by to which the wind and speed wdx wdy values are included.

Fairway & Green – Calculation of Ball Position



Wind speed/Direction = wdx,wdy

```
1041  IF club=40:wx=0:wy=0:ELSE wx=wdx:wy=wdy
1042  bp=INT((79-ny)*1.3)*(196/Gf(h,2)*cmax/100)
1043  bx=bx+bp*COS(RAD(ang))+wx/Gf(h,2)*bp
1044  by=by+bp*SIN(RAD(ang))+wy/Gf(h,2)*bp
```



Calculation of distance to hole

```
1045  lgth=INT(Gf(h,2)/hx*INT(SQRT((hx-bx*2)^2 +(hy-by*2)^2)))
1046  CLS#5:CURSOR#5,20,2:PRINT#5,'Distance to Hole ';lgth;'yds '
```

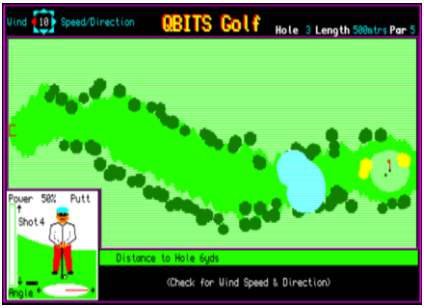
QBITS Golf Hazards

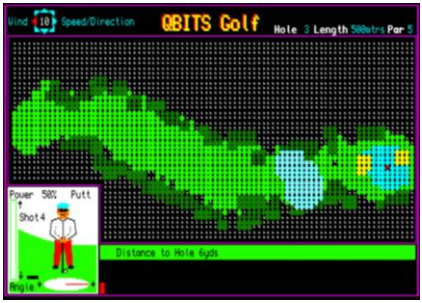
Club Drive for Fairway is set at 100%, whereas a Putt on the Green is set to only 50% and the max limit is further reduced. Hitting a Boundary incurs a Penalty Shot, landing in the Rough reduces Drive Power to 50%, landing in a Bunker reduces Power to 25%. If the ball hits a Tree the ball is randomly bounced back until clear. Landing in Water returns the ball to the Tee. The total number of player shots per Fairway are limited to 9.

QBITS Golf Fairway

The challenge was for each Fairway to be represented with differing difficulties, taking into account course Par and Distance. This turned out to be more problematic than originally expected and required playing around with randomised variables to create the change in layouts.

The Fairway is divided into sections starting with the Tee and progressing through three more sections to the fifth the Green. Each section required a border of trees and Bunkers are placed at the edges of the Green. For a few of the longer Fairways a Lake is added. Location of all these are held in an array so that when the ball lands on any area on or off the Fairway any hazards encountered are acted upon.





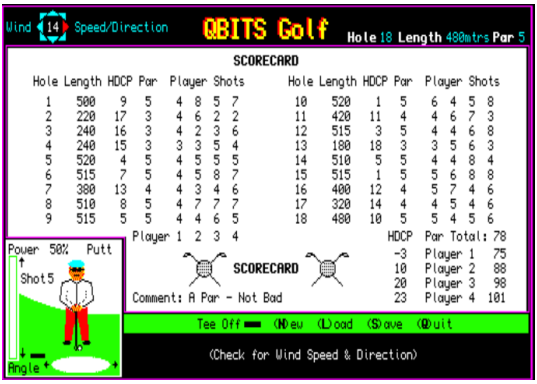
GTest used in the deployment stages displays the Fairway grid((84,40) configuration with the colour patterns that identify the different elements. Fairway, Green, Hole, Trees, Bunkers, Lake and Rough. The array is used by procedure **Chaz** to process a new ball position.

```
2000 DEFine PROCedure GTest
2001 BLOCK#3,500,129,0,0,0:BLOCK#3,386,52,114,128,0
2002 FOR b=1 TO 40
2003  FOR a=1 TO 84
2004     IF b<13 AND a<20:NEXT a
2005     IF grid(a,b)=   4:INK#3,   4:FILL#3,1:CIRCLE#3,a*2,b*2,.7:FILL#3,0      Fairway
2006     IF grid(a,b)=223:INK#3,223:FILL#3,1:CIRCLE#3,a*2,b*2,.7:FILL#3,0       Green
2007     IF grid(a,b)=224:INK#3,224:FILL#3,1:CIRCLE#3,a*2,b*2,.7:FILL#3,0       Trees
2008     IF grid(a,b)=   6:INK#3,   6:FILL#3,1:CIRCLE#3,a*2,b*2,.7:FILL#3,0      Bunker
2009     IF grid(a,b)=  85:INK#3,  85:FILL#3,1:CIRCLE#3,a*2,b*2,.7:FILL#3,0      Lake
2010     IF grid(a,b)=   0:INK#3,   7:FILL#3,0:CIRCLE#3,a*2,b*2,.7:FILL#3,0      Rough
2011     IF grid(a,b)=255:INK#3,   2:FILL#3,1:CIRCLE#3,a*2,b*2,.4:FILL#3,0      Hole
2012   END FOR a
2013 END FOR b
2014 END DEFine
```

QBITS Golf SCORECARD

At the end of each hole played a SCORECARD is shown with the player results together with three other computer simulated opponents. The Hole order of play 1-18 is shown with Fairway length, its Handicap HDCP (1) being most difficult to easiest (18) with a Par for expected number of strokes. To continue - Tee/Off with Spacebar.

Alternatively, you can (**S**)ave for later or simply (Q)uit which will not save the present Game.



Score Ratings

"Hole in One! – Superb Shot"
"An Albatross... Incredible"
"Fantastic shot…an Eagle"
"Well played…a Birdie"
"A Par - Not bad!"
"A Single Bogey"
"A Double Bogey"
"Not so good on this hole"
"You are out of shots"

On completion SCORECARD displays your Handicap [HDCP] for the course.

QBITS Golf_Procedures

Init_win	Sets Window sizes etc.
Int_Tee	Draws Power slider, Angle Direction Ellipse etc.
Init_Golfer(x,y)	Golfer Graphics
Init_Wind	Draws Wind – Speed/Direction indicator
Init_Holes	Set Random entries for Fairway and Green
QBGolf_Welcome	Introduction screen
Golf_Trolley(x,y)	Draws Golfers Trolly
GClub(x,y)	Draws Club Symbol
Golf_Game	Main Loop
Golf_Sel	Main Menu:
Commds	Display Menu: Tee Off (N)ew (L)oad (S)ave (E)xit
GFairway(h)	Sets Fairway Sections Tee - Green
Haz(gh,col,hx,hy,hd)	Sets Hazards Trees/ Bunkers
Lake(ch,x,y)	Sets Lake
GDraw(ch,col,fx,fy,fr,fe)	Draws Fairway Tee – Green / Hazards /Lake
GMark(col,mw,md,fx,fy)	Marks grid(84,40) with Fairway Configuration.
CPower	Set / Calculate - Power :Angle : Distance to Hole
CShoot(bx,by)	Moves location of Ball
CTest(bx,by)	Checks on Boundaries & Hazards
BPlay(str$)	Prints message: Boundaries & Hazards
Scorecard	Displays Course Info & Player Results
GBold(ch,col,cs,cs,cy,str$)	Prints Str$ in Bold

GSave GLoad QExit Confirm Y/N **GTest** Displays Fairway grid(84,40) elements

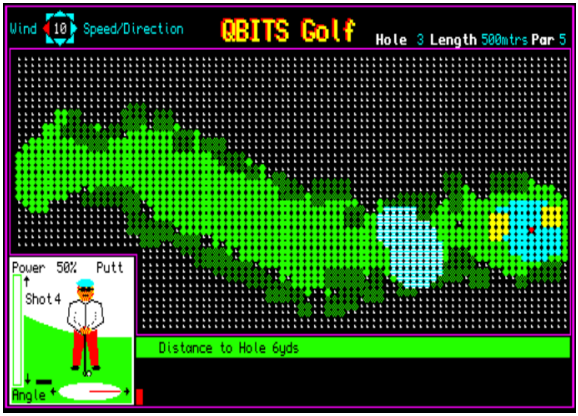
QBITS Golf Code

```
1000 REMark QBITS_Golf_bas  [QBITSGolf  2024  QL40th – QPC2] vM30

1002 dev$='win1_':MODE 4:gx=0:gy=0 REMark Basic Settings

1004 WHEN ERRor :eck=1:CONTINUE:END WHEN

1006 REMark Import QBITSconfig Settings - QPC2
1007 OPEN_IN#9,dev$&'QBITSConfig' :INPUT#9,gx\gy\dn$\dev$:CLOSE#9

1010 REMark ARRAYS Gf-Fairway Gn-Green Gs-shots Gp-Golfer Wd-Wind  pw-Par
1011 DIM Gf(18,7),HDCap(18),Gn(18,6),Gs(18,4),Gp(18,6),Wd(8,8),pw(18)
1012 DevFName$=dev$&"QBGolf_Dat"

1014 Init_win:h=0:QBITS_Game

1016 DEFine PROCedure QBITS_Golf
1017 REPeat hole
1018   eck=0:Golf_Sel:h=h+1:GFairway h:CWind:CLS#5
1019   bx=1:by=23:sht=0:CPower:Scorecard
1020 END REPeat hole
1021 END DEFine

1023 DEFine PROCedure CPower
1024 cmax=100:club=13:club$='Drive':ang=0:lgth=Gf(h,2)
1025 REPeat h_lp
1026 IF sht>8 OR grid(bx,by)=255 OR lgth<1:EXIT h_lp
1027 INK#4,0:CURSOR#4,36,2:PRINT#4,FILL$(' ',3-LEN(cmax));cmax;'%'
1028 ny=79  :CURSOR#4,78,2:PRINT#4,club$:CURSOR#4,40,22:PRINT#4,sht+1
1029  REPeat T_lp
1030   INK#4,2:LINE#4,57,8.5 TO 57+22*COS(RAD(ang)),8.5+6*SIN(RAD(ang))
1031   k=CODE(INKEY$(-1))
1032   INK#4,7:LINE#4,57,8.5 TO 57+22*COS(RAD(ang)),8.5+6*SIN(RAD(ang))
1033   SELect ON k
1034    =192:ang=ang+7.5:IF ang>=360:ang=0
1035    =200:ang=ang-7.5:IF ang<=0:ang=360
1036    =208:BLOCK#4,4,1,5,ny,2:ny=ny-1:IF ny<club:ny=club
1037    =216:BLOCK#4,4,1,5,ny,7:ny=ny+1:IF ny>79:ny=79
1038    = 32:BLOCK#4,4,68,5,13,7:sht=sht+1:EXIT T_lp
1039   END SELect
1040  END REPeat T_lp
1041   IF club=40:wx=0:wy=0:ELSE wx=wdx:wy=wdy
1042   bp=INT((79-ny)*1.3)*(196/Gf(h,2)*cmax/100)
1043   bx=bx+bp*COS(RAD(ang))+wx/Gf(h,2)*bp
1044   by=by+bp*SIN(RAD(ang))+wy/Gf(h,2)*bp
1045   lgth=INT(Gf(h,2)/px*INT(SQRT((px-bx*2)^2 +(py-by*2)^2)))
1046   CLS#5:CURSOR#5,20,2:PRINT#5,'Distance to Hole ';lgth;'yds  '
1047   CShoot bx,by
1048 END REPeat h_lp
1049 IF sht>9:Gs(h,1)=9:ELSE Gs(h,1)=sht
1050 END DEFine
```

Note: Club Shoot

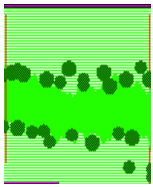
```
1052 DEFine PROCedure CShoot(bx,by)
1053 bcol=grid(x0,y0):IF bcol=0:bcol=95
1054 INK#3,bcol:FILL#3,1:CIRCLE#3,x0*2,y0*2,.4:FILL#3,0
1055 IF club=40:Flag px,py
1056 CHaz bx,by:x0=bx:y0=by
1057 FOR i=1 TO 4
1058  INK#3,bcol:FILL#3,1:CIRCLE#3,bx*2,by*2,.9:FILL#3,0
1059  INK#3,0   :PAUSE 5 :CIRCLE#3,bx*2,by*2,.4:PAUSE 5
1060 END FOR i
1061 END DEFine
```

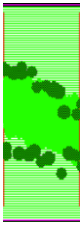
Note: Test display showing hazards

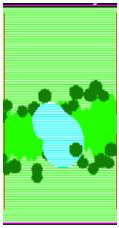



```
1063 DEFine PROCedure CHaz(bx,by)
1064 xmin=1:xmid=20:xmax=84:ymin=1:ymid=13:ymax=40:bck=0:cmax=100
1065 IF bx>xmax:bx=xmax:bck=1
1066 IF bx<xmin:bx=xmin:bck=1
1067 IF by>ymax:by=ymax:bck=1
1068 IF by<ymin:by=ymin:bck=1
1069 IF bx<xmid AND by<ymid:by=ymid:bck=1
1070 IF bck=1:BPlay 'Out of Bounds / Penalty Shot':sht=sht+1:RETurn
1071 bcol=grid(bx,by)
1072 IF bcol=223:club$='Putt ':club=40:cmax=50       :RETurn
1073 IF bcol=  0:BPlay 'Ball in the Rough!'            :cmax=50:bcol=95
1074 IF bcol=  6:BPlay 'Ball Bunkered'                 :cmax=25
1075 IF bcol= 85:CLS#5:BPlay 'Water! Back to Tee':bx=1:by=23:bcol=4
1076 IF bcol=224
1077    BPlay 'Ball hit a Tree':PAUSE 30:BPlay ''
1078    x0=bx:y0=by:bx=bx-1:by=by+RND(-1 TO 1):PAUSE 20:CShoot bx,by
1079 END IF
1080 END DEFine

1082 DEFine PROCedure BPlay(str$)
1083 CURSOR#5,200,2:PRINT#5,str$:CLS#5,4
1084 END DEFine
```

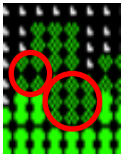
```
1086 DEFine PROCedure GFairway(h)
1087 DIM grid(84,40):RANDOMISE:par=Gf(h,1):dist=Gf(h,2):INK#2,5
1088 CURSOR#2,362,16:PRINT#2,FILL$(' ',2-LEN(h))&h
1089 CURSOR#2,426,16:PRINT#2,dist;'mtrs':CURSOR#2,496,16:PRINT#2,par
1090 BLOCK#3,500,129,0,0,95:BLOCK#3,386,52,114,128,95
1091 REMark Fairway Tee
1092 RESTORE 1093:FOR fx=1 TO 10:READ fy,fd:Haz 9,4,fx,fy,fd
1093 DATA 23,3,23,4,23,5,23,5,24,6,25,5,26,6,26,6,26,5,26,5
1094 INK#3,2:LINE#3,3,44 TO .5,44 TO .5,48 TO 3,48
1095 fy=26:x0=1:y0=23:grid(x0,y0)=4:CIRCLE#3,x0*2,y0*2,.4
1096 REMark Fairway Sect1
1097 FOR fx=11 TO Gf(h,5)
1098   fy=fy+(-par+RND(1 TO 3))/10:fd=9-par+RND(0 TO 1):fr=fd+1
1099   IF fy+fd>38:fy=36-fd
1100   IF fy-fd<18:fy=20+fd
1101   Haz 9,4,fx,fy,fd
1102   Haz RND(0 TO 3),224,fx-RND(2 TO 4),fy+fd+RND(0 TO 2),fd
1103   Haz RND(0 TO 4),224,fx-RND(2 TO 3),fy-fd+RND(0 TO 1),fd
1104 END FOR fx
1105 REMark Fairway Sect2
1106 FOR fx=Gf(h,5)+1 TO Gf(h,6)
1107   fy=fy+(-par+RND(-1 TO 2))/10:fd=9+RND(2 TO 3)-par:fr=fd+1
1108   IF fy+fd>38:fy=36-fd
1109   IF fy-fd< 5:fy= 7+fd
1110   Haz 9,4,fx,fy,fd
1111   Haz RND(0 TO 2),224,fx-RND(2 TO 4),fy+fd+RND( 1 TO 2),fd
1112   Haz RND(0 TO 3),224,fx-RND(3 TO 5),fy-fd+RND(-1 TO 0),fd
1113 END FOR fx
1114 REMark Fairway Sect3
1115 FOR fx=Gf(h,6)+1 TO 72
1116   fy=fy+(-par+RND(4 TO 8))/10:fd=9-par+RND(0 TO 2):fr=fd+1
1117   IF fy+fd>38:fy=36-fd
1118   IF fy-fd< 5:fy= 7+fd
1119   Haz 9,4,fx,fy,fd
1120   Haz RND(0 TO 3),224,fx-RND(2 TO 5),fy+fd+RND( 0 TO 1),fd
1121   Haz RND(0 TO 4),224,fx-RND(3 TO 5),fy-fd+RND(-2 TO 0),fd
1122 END FOR fx
1123   IF par>3 AND RND(1 TO 3)=3:Lake 3,fx-10,fy+RND(-2 TO +2)
1124 REMark Fairway Green
1125 y2=fy+Gn(h,1):RESTORE 1126:FOR fx=73 TO 84:READ fd:Haz 9,4,fx,fy,fd
1126 DATA 5,5,6,6,6,7,7,6,6,6,5,4
1127 GDraw 3,223,158,fy*2,8,1:FOR fx=76 TO 83:READ fd:GMark 223,fx,fy-fd,fx,fy+fd
1128 DATA 3,3,4,4,4,4,3,3
1129 GDraw 3,223,154,y2*2,5,1:FOR fx=74 TO 77:READ fd:GMark 223,fx,y2-fd,fx,y2+fd
1130 DATA 2,2,3,3
1131 grid(79,fy)=255:px=79*2:py=fy*2:Flag px,py
1132 FOR fx=64 TO 82
1133   Haz RND(0 TO 5),224,fx,fy+6+RND( 0 TO 1)
1134   Haz RND(0 TO 4),224,fx,fy-5+RND(-2 TO 0)
1135 END FOR fx
1136 Haz 1,6,73,fy+Gn(h,2),1:Haz 2,6,74,fy+Gn(h,3),1:Haz 1,6,73,fy+Gn(h,4),1
1137 Haz 1,6,81,fy+Gn(h,5),0:Haz 2,6,82,fy+Gn(h,6),1
1138 END DEFine
```



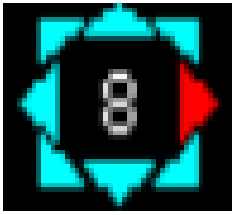




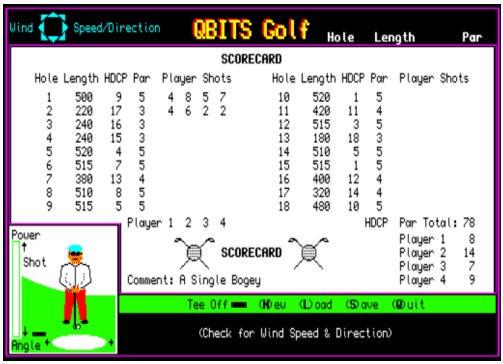
```
1140 DEFine PROCedure Haz(gh,col,hx,hy,hd)
1141 IF gh=1:GMark col,hx,hy-1,hx+1,hy      :GDraw 3,col,hx*2+1,hy*2-1,2,1
1142 IF gh=2:GMark col,hx-1,hy-1,hx+1,hy+1:GDraw 3,col,hx*2  ,hy*2  ,2.5,1
1143 IF gh=9:GMark col,hx,hy-hd,hx,hy+hd  :GDraw 3,col,hx*2  ,hy*2  ,hd*2,.2
1144 :END DEFine
```



```
1146 DEFine PROCedure Lake(ch,x,y)
1147 INK#3,85:FILL#3,1:ARC#3,x*2,y*2 TO x*2-12,y*2-6,PI TO x*2-8,y*2-10,PI/2
1148 ARC#3 TO x*2+6,y*2-16,PI TO x*2,y*2,PI /2:FILL#ch,0
1149 RESTORE 1143:x=x-6:y=y+1:FOR i=0 TO 9:READ y1,y2:GMark 85,x+i,y+y1,x+i,y+y2
1150 DATA -4,-1,-5,0,-9,0,-10,0,-11,0,-11,0,-11,-2,-11,-2,-10,-3,-9,-5
1151 END DEFine

1153 DEFine PROCedure GDraw(ch,col,fx,fy,fr,fe)
1154 INK#ch,col:FILL#ch,1:CIRCLE#ch,fx,fy,fr,fe,PI:FILL#ch,0
1155 END DEFine

1157 DEFine PROCedure GMark(col,mw,md,fx,fy)
1158 FOR my=md TO fy:FOR mx=mw TO fx:grid(mx,my)=col:END FOR mx:END FOR my
1159 END DEFine

1161 DEFine PROCedure Flag(px,py)
1162 INK#3,2:LINE#3,px,py TO px,py+4 TO px-1,py+3.5 TO px,py+3
1163 INK#3,0:FILL#3,1:CIRCLE#3,px,py,.4:FILL#3,0
1164 END DEFine


1166 DEFine PROCedure CWind
1167 wdx=0:wdy=0:wnd=Gf(h,3):wns=Gf(h,4):IF wns<10:cp=44:ELSE cp=41
1168 INK#2,7:CURSOR#2,41,9:PRINT#2,'  ':CURSOR#2,cp,9:PRINT#2,wns
1169 IF h>1
1170   a=Gf(h-1,3):INK#2,5:FILL#2,1:LINE#2,Wd(a,1),Wd(a,2) TO Wd(a,3),Wd(a,4)
1171   LINE#2 TO Wd(a,5),Wd(a,6) TO Wd(a,7),Wd(a,8):FILL#2,0
1172 END IF
1173   a=Gf(h,3)  :INK#2,2:FILL#2,1:LINE#2,Wd(a,1),Wd(a,2) TO Wd(a,3),Wd(a,4)
1174   LINE#2 TO Wd(a,5),Wd(a,6) TO Wd(a,7),Wd(a,8):FILL#2,0
1175 SELect ON wnd
1176  ON wnd=1:wdx=0          :wdy=wns      :REMark north
1177  ON wnd=2:wdx=wns/2      :wdy=wns/2    :REMark n/e
1178  ON wnd=3:wdx=wns        :wdy=0        :REMark east
1179  ON wnd=4:wdx=wns/2      :wdy=-wns/2   :REMark s/e
1180  ON wnd=5:wdx=0          :wdy=-wns     :REMark south
1181  ON wnd=6:wdx=-wns/2     :wdy=-wns/2   :REMark s/w
1182  ON wnd=7:wdx=-wns       :wdy=0        :REMark west
1183  ON wnd=8:wdx=-wns/2     :wdy=wns/2    :REMark n/w
1184 END SELect
1185 END DEFine
```



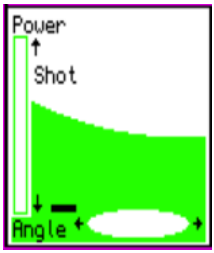
```
1187 DEFine PROCedure QBold(ch,col,cs,cx,cy,str$)
1188 INK#ch,col:OVER#ch,1
1189 FOR a=1 TO LEN(str$)
1190   FOR b=0 TO cs:CURSOR#ch,cx+b+a*(6+cs),cy:PRINT#ch,str$(a)
1191 END FOR a:OVER#ch,0
1192 END DEFine

1194 DEFine PROCedure Scorecard
1195 BLOCK#3,500,129,0,0,7:BLOCK#3,386,52,114,128,7 :STRIP#3,7
1196 QBold 3,0,1,210,4,'SCORECARD':QBold 3,0,1,210,146,'SCORECARD'
1197 CURSOR#3,  24,18:PRINT#3,"Hole Length HDCP Par  Player Shots"
1198 CURSOR#3,270,18:PRINT#3,"Hole Length HDCP Par  Player Shots"
1199 cpar=0:FOR hp=1 TO 18:cpar=cpar+Gf(hp,1)
1200 CURSOR#3,366,124:PRINT#3,'HDCP  Par Total: ';cpar
1201 CURSOR#3,120,124:PRINT#3,'Player 1  2  3  4'
1202 FOR c=1 TO 18
1203  IF c<10:CURSOR#3,36,22+c*10:ELSE CURSOR#3,276,22+(c-9)*10
1204 PRINT#3,c;"    ";Gf(c,2);FILL$(' ',5-LEN(Gf(c,7)));Gf(c,7);"   "; Gf(c,1)
1205 END FOR c
1206 Sc=0:FOR i=1 TO 4:pw(i)=0
1207 FOR hs=1 TO h
1208  FOR i=1 TO 4
1209   IF hs<10:CURSOR#3,144+i*18,22+hs*10:ELSE CURSOR#3,390+i*18,22+(hs-9)*10
1210   PRINT#3,Gs(hs,i):pw(i)=pw(i)+Gs(hs,i):n$=pw(i)
1211   CURSOR#3,402,126+i*10:PRINT#3,'Player ';i;FILL$(' ',5-LEN(n$))&n$
1212   IF hs=18:CURSOR#3,366,126+i*10:n$=n$-cpar:PRINT#3,FILL$(' ',3-LEN(n$))&n$
1213  END FOR i
1214  Sc=Sc+Gs(hs,1)-Gf(hs,1):sht=Gs(h,1):par=Gf(h,1)
1215 END FOR hs
1216 GClub 64,13:GClub 104,13:CURSOR#3,120,166:PRINT#3,'Comment: ';
1217 IF sht=1        :PRINT#3,"Hole in One! - Superb Shot"     :RETurn
1218 IF sht=par-3  :PRINT#3,"An Albatross... Incredible"
1219 IF sht=par-2  :PRINT#3,"Fantasitc shot... An Eagle"
1220 IF sht=par-1  :PRINT#3,"Well played... A birdie"
1221 IF sht=par      :PRINT#3,"A Par - Not Bad"
1222 IF sht=par+1  :PRINT#3,"A Single Bogey"
1223 IF sht=par+2  :PRINT#3,"A Double Bogey"
1224 IF sht>8        :PRINT#3,"You are out of Shots"              :RETurn
1225 IF sht>par+2  :PRINT#3,"Not so good on this Hole"
1226 END DEFine
```



```
1228 DEFine PROCedure Golf_Sel
1229 REPeat lp
1230  Commds:k=CODE(INKEY$(-1))
1231  IF k=32 AND chk=1 AND h<18:EXIT lp
1232  IF k=83 OR k=113 :QExit:BLOCK#5,20,10,230,2,4
1233  IF k=78 OR k=110 :chk=1:Init_Holes:h=0:EXIT lp
1234  IF k=83 OR k=115 :IF chk=1:GSave
1235  IF k=76 OR k=108 :GLoad: IF eck=0:chk=1:Scorecard
1236 END REPeat lp
1237 END DEFine

1239 DEFine PROCedure Commds
1240 CLS#5:BLOCK#5,16,4,116,5,0:OVER#5,1
1241 CURSOR#5, 70,2:PRINT#5,'Tee Off     (N)ew  (L)oad  (S)ave  (Q)uit'
1242 CURSOR#5,149,2:PRINT#5,'N      L       S       Q ' :OVER#5,0
1243 END DEFine

1245 DEFine PROCedure QExit
1246 CURSOR#5,320,2:PRINT#5,'Y/N':PAUSE:IF KEYROW(5)=64:LRUN dn$:STOP
1247 END DEFine

1249 DEFine PROCedure GSave
1250 CLS#5:CURSOR#5,76,2:PRINT#5,"Please wait - Saving..."
1251 DELETE DevFName$:OPEN_NEW#9,DevFName$:PRINT#9,h
1252 FOR a=1 TO 18
1253   FOR b=1 TO 7:PRINT#9,Gf(a,b):END FOR b
1254   FOR b=1 TO 6:PRINT#9,Gn(a,b):END FOR b
1255   FOR b=1 TO 4:PRINT#9,Gs(a,b):END FOR b
1256   CURSOR#5,196+a*6,2:PRINT#5,'.':PAUSE 1
1257 END FOR a:CLOSE#9
1258 END DEFine

1260 DEFine PROCedure GLoad
1261 CLS#5:CURSOR#5,76,2:PRINT#5,"Please wait - Loading..."
1262 OPEN_IN#9,DevFName$:INPUT#9,h
1263 FOR a=1 TO 18
1254   FOR b=1 TO 7:INPUT#9,Gf(a,b):END FOR b
1255   FOR b=1 TO 6:INPUT#9,Gn(a,b):END FOR b
1256   FOR b=1 TO 4:INPUT#9,Gs(a,b):END FOR b
1267   CURSOR#5,196+a*6,2:PRINT#5,'.':PAUSE 1
1268 END FOR a
1269 CLOSE#9:Init_wind:BLOCK#4,10,10,38,22,7:BLOCK#4,76,10,36,2,7
1270 BLOCK#2,14,10,362,16,0:BLOCK#2,42,10,426,16,0:BLOCK#2,8,10,496,16,0
1271 END DEFine
```

```
1273 DEFine PROCedure Init_win
1274 OPEN#6,scr_:WINDOW#6,512,256,gx,gy:BORDER#6,1,3:PAPER#6,0:CLS#6
1275 OPEN#5,scr_:WINDOW#5,390,13,gx+118,gy+211:PAPER#5,4:INK#5,0:CLS#5
1276 OPEN#4,scr_:WINDOW#4,112,94,gx+4,gy+160  :PAPER#4,7:CLS#4:SCALE#4,100,0,0
1277 OPEN#3,scr_:WINDOW#3,500,180,gx+6,gy+29  :SCALE#3,82,0,0
1278 WINDOW#2,508,212,gx+2,gy+1:PAPER#2,0:SCALE#2,140,0,0
1279 WINDOW#1,246,166,gx+250,gy+36:
1280 WINDOW#0,390,30,gx+118,gy+224:PAPER#1,0:CSIZE#0,0,0
1281 CSIZE#2,2,1:OVER#2,1
1282 INK#2,2:FOR i=0 TO 1:CURSOR#2,190+i,5:PRINT#2,'QBITS Golf'
1283 INK#2,6:FOR i=0 TO 1:CURSOR#2,192+i,6:PRINT#2,'QBITS Golf'
1284 CSIZE#2,0,0:OVER#2,0
1285 INK#2,3:LINE#2,1,36 TO 1,123 TO 248,123 TO 248,2 TO 57,2 TO 57,36 TO 1,36
1286 QBold 2,7,1,324,16,'Hole   Length      Par'
1287 CURSOR#0,80,10:PRINT#0,"(Check for Wind Speed & Direction)"
1288 Init_Tee:Init_Golfer 54,74:Init_wind:QBGolf_Welcome:chk=0:Commds
1289 END DEFine
```

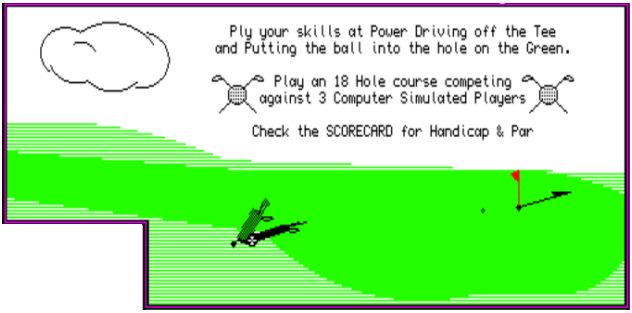
```
1291 DEFine PROCedure Init_Tee
1292 FILL#4,1:INK#4,4:CSIZE#4,0,0
1293 ARC#4,10,60 TO 86.5,45,PI/6:LINE#4 TO 86.5,1  TO 10,1 TO 10,60
1294 FILL#4,0:INK#4,0:CURSOR#4,14,22:PRINT#4,'Shot':STRIP#4,4
1295 CURSOR#4, 2,83:PRINT#4,'Angle':CURSOR#4,36,80:PRINT#4,'🡐    🡒'
1296 CURSOR#4,13,72:PRINT#4,'🡑':STRIP#4,7:BLOCK#4,14,3,24,78,0
1297 CURSOR#4,12,10:PRINT#4,'🡓':CURSOR#4,2,2:PRINT#4,'Power'
1298 INK#4,7:FILL#4,1:CIRCLE#4,57,8,22,.25,PI/2:FILL#4,0          :REMark Angle
1299 INK#4,4:LINE#4,2,13 TO 2,88 TO 8,88 TO 8,13 TO 2,13          :REMark Power
1300 END DEFine
```




```
1302 DEFine PROCedure Init_Golfer(x,y)
1303 INK#4,226:FILL#4,1:CIRCLE#4,x,y+3,7,.8,PI:FILL#4,0              :REMark Head
1304 INK#4,0:LINE#4,x-5,y+4 TO x+6,y+4:LINE#4,x-2,y TO x+2,y         :REMark Mouth
1305 CIRCLE#4,x-2,y+4,2,.6,PI/2:CIRCLE#4,x+2,y+4,2,.6,PI/2           :REMark Specs
1306 INK#4,5:FILL#4,1:CIRCLE#4,x,y+8.5,6,.4,PI/2:FILL#4,1            :REMark Cap
1307 FILL#4,1:INK#4,2                                                :REMark Left Leg
1308 LINE#4,x,y-29 TO x-3,y-40 TO x-4,y-47 TO x-9,y-47 TO x-8,y-23 TO x,y-29
1309 FILL#4,0:FILL#4,1                                               :REMark Right leg
1310 LINE#4,x,y-27 TO x+3,y-40 TO x+4,y-47 TO x+9,y-47 TO x+8,y-23 TO x,y-27
1311 FILL#4,0:INK#4,0
1312 FILL#4,1:CIRCLE#4,x-7,y-49,3,.4,PI/2:FILL#4,0                   :REMark Left Shoe
1313 FILL#4,1:CIRCLE#4,x+8,y-49,3,.4,PI/2:FILL#4,0                   :REMark Right Shoe
1314 REMark Left / Right Body
1315 LINE#4,x,y-6 TO x-4,y-3 TO x-11,y-5 TO x-13,y-18 TO x,y-28 TO x,y-6
1316 LINE#4,x,y-6 TO x+4,y-3 TO x+11,y-5 TO x+13,y-18 TO x,y-26 TO x,y-6
1317 LINE#4,x-1,y-22 TO x-1,y-50:ARC#4 TO x-1,y-54.5,-PI             :REMark Club
1318 LINE#4 TO x1,y-54 TO x,y-22:FILL#4,0:CIRCLE#4,x+2,y-53,1.8
1319 INK#4,7:FILL#4,1:CIRCLE#4,x+2,y-53,1:FILL#1,0                   :REMark Golf Ball
1320 INK#4,226:FILL#4,1:CIRCLE#4,x,y-24,4,.6,PI/2:FILL#4,0           :REMark Hands
1321 INK#4,248:LINE#4,x-7,y-11 TO x-8,y-17 TO x,y-22  TO x+7,y-17 TO x+7,y-11
1322 END DEFine
```

```
1324 DEFine PROCedure Init_wind
1325 RESTORE 1327:x=23:y=131.5
1326 FOR a=1 TO 8
1327   FOR b=1 TO 8 STEP 2:READ dat1,dat2:Wd(a,b)=x+dat1:Wd(a,b+1)=y+dat2
1328 END FOR a
1329 INK#2,5:CURSOR#2,2,9:PRINT#2,'Wind       Speed/Direction':INK#2,5
1330 FOR a=1 TO 8
1331   FILL#2,1:LINE#2,Wd(a,1),Wd(a,2) TO Wd(a,3),Wd(a,4)
1332   LINE#2 TO Wd(a,5),Wd(a,6) TO Wd(a,1),Wd(a,2):FILL#2,0
1333 END FOR a
1334 DATA 0,7.5,-2.5,5,2.5,5,0,7.5,6,6,6,3,3,6,6,6                :REMark North N/E
1335 DATA 7.5,0,5,2.5,5,-2.5,7.5,0,6,-6,6,-3,3,-6,6,-6            :REMark East  S/E
1336 DATA 0,-7.5,2.5,-5,-2.5,-5,0,-7.5,-6,-6,-3,-6,-6,-3,-6,-6    :REMark south
1337 DATA -7.5,0,-5,-2.5,-5,2.5,-7.5,0,-6,6,-3,6,-6,3,-6,6        :REMark west
1338 END DEFine


1340 DEFine PROCedure Init_Holes
1341 RANDOMISE:CLS#5:CURSOR#5,48,2:PRINT#5,"Please wait - Initialsing..."
1342 FOR h=1 TO 18
1343  Gf(h,1)=RND(3 TO 5):par=Gf(h,1)                  :REMark Par
1344  Gf(h,2)=140*(par-2)+20*(par+RND(-2 TO 3))        :REMark Distance
1345  IF Gf(h,2)<180:Gf(h,2)=180+RND(1 TO 3)*5         :REMark Check lght
1346  IF Gf(h,2)>525:Gf(h,2)=525-RND(1 TO 3)*5         :REMark Check lgth
1347  Gf(h,3)=RND(1 TO  8)                             :REMark Wind Direction
1348  Gf(h,4)=RND(1 TO 15)                             :REMark Wind Strength
1349  Gf(h,5)=RND(20 TO 40)                            :REMark fxe Sect 1
1350  Gf(h,6)=RND(48 TO 52)                            :REMark fxe Sect 2
1351  Gf(h,7)=Gf(h,2)+h:HDCap(h)=Gf(h,7)               :REMark HDCP
1352  Gn(h,1)=RND(-1 TO 1)                             :REMark Green Angle
1353  Gn(h,2)=RND(-1 TO 0)                             :REMark Bunker 1
1354  Gn(h,3)=RND( 0 TO 1)                             :REMark Bunker 1
1355  Gn(h,4)=RND(-2 TO 0)                             :REMark Bunker 1
1356  Gn(h,5)=RND( 3 TO 4)                             :REMark Bunker 2
1357  Gn(h,6)=RND( 2 TO 3)                             :REMark Bunker 2
1358  REMark Player Score Gs(h,1) + Gs(h,2 to 4) Computer Players
1359  Gs(h,1)=0:FOR p=2 TO 4:Gs(h,p)=Gf(h,1)+RND(-1 TO 3):END FOR p
1360  CURSOR#5,210+h*6,2:PRINT#5,".":PAUSE 1
1361 END FOR h
1362 FOR h=17 TO 1 STEP -1
1363   FOR i=1 TO h
1364     num1=HDCap(i):num2=HDCap(i+1)                  :REMark Sort HDCP
1365     IF num2>num1:HDCap(i+1)=num1:HDCap(i)=num2
1366   END FOR i
1367 END FOR h
1368 FOR h=1 TO 18
1369   FOR i=1 TO 18:IF Gf(h,7)=HDCap(i):Gf(h,7)=i:END IF
1370 END FOR h
1371 END DEFine
```

```
1373 DEFine PROCedure QBGolf_Welcome
1374 BLOCK#3,500,100,0,0,7:INK#3,0:STRIP#3,7
1375 ARC#3,40,72 TO 20,75,PI/2 TO 12,64,PI:ARC#3,24,70 TO 18,72,PI/2
1376 ARC#3,12,66 TO 22,62,PI/2 TO 36,62,PI/2:ARC#3,35,60 TO 38,75,PI
1377 AT#3,1,30:PRINT#3,"Ply your skills at Power Driving off the Tee"
1378 AT#3,2,28:PRINT#3,"and Putting the ball into the hole on the Green."
1379 AT#3,4,36:PRINT#3,"Play an 18 Hole course competing"
1380 AT#3,5,34:PRINT#3,"against 3 Computer Simulated Players"
1381 AT#3,7,33:PRINT#3,"Check the SCORECARD for Handicap & Par"
1382 INK#3,95:FILL#3,1:LINE#3,170,.5 TO 170,36 TO 60,40:ARC#3 TO 0,50,PI/6
1383 LINE#3 TO 0,24 TO 39,24 TO 39,.5 TO 170,.5:FILL#3,0
1384 INK#3,4:FILL#3,1:LINE#3,0,42 TO 115,33:ARC#3 TO 170,30,-PI/4 TO 140,8,-PI/1.2
1385 ARC#3 TO 60,35,-PI/2:LINE#3 TO 115,14 TO 0,30 TO 0,42:FILL#3,0
1386 INK#3,2:FILL#3,1:LINE#3,140.3,27 TO 140.3,37 TO 138,36 TO 140,34 TO 140,27
1387 INK#3,0:CIRCLE#3,140,27,.6:FILL#3,0
1388 FILL#3,1:LINE#3,140,27 TO 154,31 TO 149,31 TO 150,30:FILL#3,0
1389 CIRCLE#3,130,26,.4:Golf_Trolley 70,25:GClub 63,58:GClub 148,58
1390 END DEFine
```




```
1392 DEFine PROCedure Golf_Trolley(x,y)
1393 INK#3,0:LINE#3,x-6,y-6 TO x-8,y-8:CIRCLE#3,x+8,y-4.5,2,.2,PI/2
1394 FILL#3,1:LINE#3,x-7,y-7 TO x-4,y-8 TO x+8,y-4 TO x+5,y-3 TO x-7,y-7:FILL#3,0
1395 LINE#3,x+4,y-4 TO x+12,y-2:LINE#3,x+3,y-4 TO x+10,y-2
1396 CIRCLE#3,x+1,y-1,2,.2,PI/2 :LINE#3,x,y+.4 TO x-3,y+1.4
1397 INK#3,224:FILL#3,1:LINE#3,x,y TO x-3,y+1 TO x-7,y-6 TO x-4,y-7 TO x,y:FILL#3,0
1398 INK#3,  0:FILL#3,1:CIRCLE#3,x-8,y-8,.6 :FILL#3,0
1399 INK#3,  0:FILL#3,1:CIRCLE#3,x-3,y-7,1.6:FILL#3,0
1400 INK#3,  7:FILL#3,1:CIRCLE#3,x-3,y-7,.9 :FILL#3,0
1401 INK#3,  0:LINE#3,x-4,y-6 TO x-2,y-8:LINE#3,x-4,y-8 TO x-2,y-6
1402 LINE#3,x-1.5,y TO x-.5,y+3 :CIRCLE#3,x,y+3,.4
1403 LINE#3,x-1,y TO x,y+4        :CIRCLE#3,x+.5,y+4,.4
1404 LINE#3,x-.5,y TO x+1,y+3   :CIRCLE#3,x+1.2,y+3,.4
1405 END DEFine
```

```
1407 DEFine PROCedure GClub(x,y)
1408 LINE#3,x-5,y-5 TO x+5,y+5:ARC#3 TO x+7,y+4,-PI/2:LINE#3 TO x+4,y+4.5
1409 LINE#3,x+5,y-5 TO x-5,y+5:ARC#3 TO x-7,y+4, PI/2:LINE#3 TO x-4,y+4.5
1410 INK#3,63:FILL#3,1:CIRCLE#3,x,y,2:FILL#3,0:INK#3,0:CIRCLE#3,x,y,2.5
1411 END DEFine
```