

## Question 1

### Hamilton

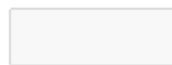
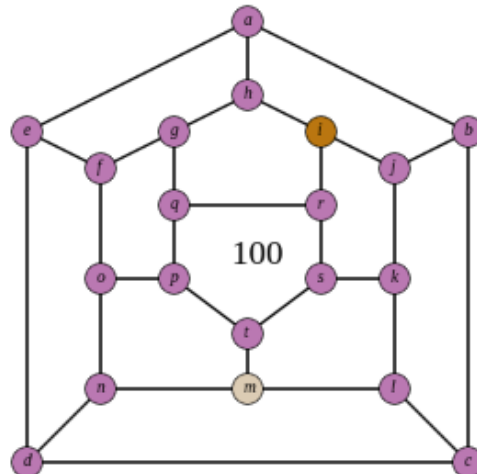


# Gamemaster

team\_rocket  
Sign Out

Protocol: manager  
Identifier: tester\_team\_rocket

Game: hamilton  
Startclock: 10  
Playclock: 10



Roles	robot
Players	team_rocket_mcs_id
Score	100
Errors	0

```
message(1651688934, tester_team_rocket, team_rocket_mcs_id, play(7, move(r)))
message(1651688941, team_rocket_mcs_id, tester_team_rocket, reply(7, move(s)))
message(1651688942, tester_team_rocket, team_rocket_mcs_id, play(8, move(s)))
message(1651688950, team_rocket_mcs_id, tester_team_rocket, reply(8, move(t)))
message(1651688952, tester_team_rocket, team_rocket_mcs_id, play(9, move(t)))
message(1651688959, team_rocket_mcs_id, tester_team_rocket, reply(9, move(p)))
message(1651688961, tester_team_rocket, team_rocket_mcs_id, play(10, move(p)))
message(1651688968, team_rocket_mcs_id, tester_team_rocket, reply(10, move(o)))
message(1651688970, tester_team_rocket, team_rocket_mcs_id, play(11, move(o)))
message(1651688977, team_rocket_mcs_id, tester_team_rocket, reply(11, move(n)))
message(1651688979, tester_team_rocket, team_rocket_mcs_id, play(12, move(n)))
message(1651688986, team_rocket_mcs_id, tester_team_rocket, reply(12, move(d)))
message(1651688988, tester_team_rocket, team_rocket_mcs_id, play(13, move(d)))
message(1651688996, team_rocket_mcs_id, tester_team_rocket, reply(13, move(c)))
message(1651688997, tester_team_rocket, team_rocket_mcs_id, play(14, move(c)))
message(1651689002, team_rocket_mcs_id, tester_team_rocket, reply(14, move(l)))
message(1651689004, tester_team_rocket, team_rocket_mcs_id, play(15, move(l)))
message(1651689006, team_rocket_mcs_id, tester_team_rocket, reply(15, move(k)))
message(1651689008, tester_team_rocket, team_rocket_mcs_id, play(16, move(k)))
message(1651689009, team_rocket_mcs_id, tester_team_rocket, reply(16, move(j)))
message(1651689010, tester_team_rocket, team_rocket_mcs_id, play(17, move(j)))
message(1651689011, team_rocket_mcs_id, tester_team_rocket, reply(17, move(b)))
message(1651689012, tester_team_rocket, team_rocket_mcs_id, play(18, move(b)))
message(1651689013, team_rocket_mcs_id, tester_team_rocket, reply(18, move(a)))
message(1651689015, team_rocket_mcs_id, tester_team_rocket, reply(19, move(a)))
message(1651689016, tester_team_rocket, team_rocket_mcs_id, play(20, move(h)))
message(1651689017, team_rocket_mcs_id, tester_team_rocket, reply(20, move(i)))
message(1651689017, tester_team_rocket, team_rocket_mcs_id, stop(21, move(i)))
```

## Hunter



# Gamemaster

team\_rocket

Sign Out

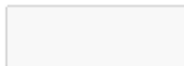
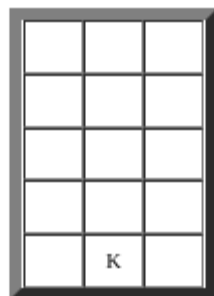
Protocol: manager

Identifier: tester\_team\_rocket

Game: hunter

Startclock: 10

Playclock: 20



Roles	robot
Players	team_rocket_mcs_id
Score	100
Errors	0

```
message(1651689052, tester_team_rocket, team_rocket_mcs_id, start(1, robot, ruleset(
ole(robot), base(cell(M,N,P)) :- row(M) & col(N) & piece(P), base(captures(M)) :-
scoremap(M,N), base(step(N)) :-
succ(M,N), base(control(robot)), action(move(M1,N1,M2,N2)) :- row(M1) & col(N1) &
knightmove(M1,N1,M2,N2), row(1), row(2), row(3), row(4), row(5), col(1), col(2), col(3),
piece(knight), piece(pawn), piece(blank), init(cell(1,1,knight)), init(cell(1,2,pawn
)), init(cell(1,3,pawn)), init(cell(2,1,pawn)), init(cell(2,2,pawn)), init(cell(2,3,
pawn)), init(cell(3,1,pawn)), init(cell(3,2,pawn)), init(cell(3,3,pawn)), init(cell(
4,1,pawn)), init(cell(4,2,pawn)), init(cell(4,3,pawn)), init(cell(5,1,pawn)), init(c
ell(5,2,pawn)), init(cell(5,3,pawn)), init(captures(0)), init(step(1)), init(control
(robot)), legal(move(M1,N1,M2,N2)) :- cell(M1,N1,knight) &
knightmove(M1,N1,M2,N2), move(M1,N1,M2,N2) :- ~cell(M2,N2,blank) &
~cell(M2,N2,pawn) & cell(M2,N2,knight), move(M1,N1,M2,N2) :- ~cell(M1,N1,knight)
& cell(M1,N1,blank), move(M1,N1,M2,N2) :- cell(M2,N2,pawn) & captures(Old) &
succ(Old,New) ==> ~captures(Old) & captures(New), move(M1,N1,M2,N2) :- step(Old)
& succ(Old,New) ==> ~step(Old) & step(New), goal(robot,Goal) :- captures(Count) &
scoremap(Count,Goal), terminal :- step(16), knightmove(M1,N1,M2,N2) :-
add1row(M1,M2) & add2col(N1,N2), knightmove(M1,N1,M2,N2) :- add1row(M1,M2) &
add2col(N2,N1), knightmove(M1,N1,M2,N2) :- add1row(M2,M1) &
add2col(N1,N2), knightmove(M1,N1,M2,N2) :- add1row(M2,M1) &
add2col(N2,N1), knightmove(M1,N1,M2,N2) :- add2row(M1,M2) &
add1col(N1,N2), knightmove(M1,N1,M2,N2) :- add2row(M1,M2) &
add1col(N2,N1), knightmove(M1,N1,M2,N2) :- add2row(M2,M1) &
add1col(N1,N2), knightmove(M1,N1,M2,N2) :- add2row(M2,M1) &
add1col(N2,N1), succ(0,1), succ(1,2), succ(2,3), succ(3,4), succ(4,5), succ(5,6), succ(
6,7), succ(7,8), succ(8,9), succ(9,10), succ(10,11), succ(11,12), succ(12,13), succ(13,
14), succ(14,15), succ(15,16), add1row(1,2), add1row(2,3), add1row(3,4), add1row(4,5),
add2row(1,3), add2row(2,4), add2row(3,5), add1col(1,2), add1col(2,3), add2col(1,3), sc
oremap(0,0), scoremap(1,1), scoremap(2,3), scoremap(3,7), scoremap(4,11), scoremap(5,
16), scoremap(6,22), scoremap(7,29), scoremap(8,37), scoremap(9,45), scoremap(10,54),
```

## Alquerque

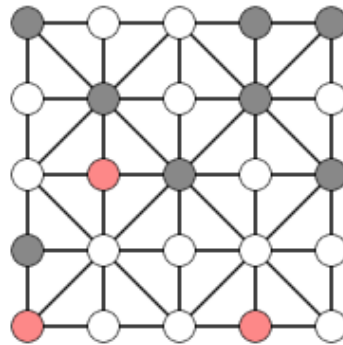


# Gamemaster

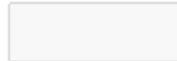
team\_rocket  
Sign Out

Protocol: manager  
Identifier: tester\_team\_rocket  
Game: alquerque  
Startclock: 10  
Playclock: 10

Step: 30



Control: black



Roles	red	black
Players	team_rocket_mcs_id	onestep
Score	20	70
Errors	0	0

Clear Begin Pause Resume End

```
message(1651689246, tester_team_rocket, team_rocket_mcs_id, start(1, red, ruleset(role(red), role(black), base(cell(M,N,Mark)) :- index(M) & index(N) & mark(Mark), base(score(Role,0)) :- role(Role), base(score(Role,N)) :- role(Role) & incr(M,N), base(control(Role)) :- role(Role), base(step(1)) :- true, base(step(N)) :- succ(M,N), base(control(red)), base(control(black)), action(move(U,V,X,Y)) :- doublet(U,V,X,Y), action(jump(U,V,W,X,Y,Z)) :- triplet(U,V,W,X,Y,Z), action(noop), index(1), index(2), index(3), index(4), index(5), mark(black), mark(red), mark(blank), init(cell(1,1,black)), init(cell(1,2,black)), init(cell(1,3,black)), init(cell(1,4,black)), init(cell(1,5,black)), init(cell(2,1,black)), init(cell(2,2,black)), init(cell(2,3,black)), init(cell(2,4,black)), init(cell(2,5,black)), init(cell(3,1,blank)), init(cell(3,2,blank)), init(cell(3,3,blank)), init(cell(3,4,blank)), init(cell(3,5,blank)), init(cell(4,1,red)), init(cell(4,2,red)), init(cell(4,3,red)), init(cell(4,4,red)), init(cell(4,5,red)), init(cell(5,1,red)), init(cell(5,2,red)), init(cell(5,3,red)), init(cell(5,4,red)), init(cell(5,5,red)), init(score(red,0)), init(score(black,0)), init(control(red)), init(step(1)), legal(move(U,V,X,Y)) :- control(Role) & cell(U,V,Role) & doublet(U,V,X,Y) & cell(X,Y,blank), legal(jump(U,V,W,X,Y,Z)) :- control(red) & cell(U,V,red) & triplet(U,V,W,X,Y,Z) & cell(W,X,black) & cell(Y,Z,blank), legal(jump(U,V,W,X,Y,Z)) :- control(black) & cell(U,V,black) & triplet(U,V,W,X,Y,Z) & cell(W,X,red) & cell(Y,Z,blank), move(U,V,X,Y) :- cell(U,V,Role) ==> ~cell(U,V,Role) & cell(U,V,blank), move(U,V,X,Y) :- cell(U,V,Role) ==> ~cell(X,Y,blank) & cell(X,Y,Role), move(U,V,X,Y) :- control(black) & control(red), move(U,V,X,Y) :- control(red) ==> ~control(red) & control(black), move(U,V,X,Y) :- step(M) & succ(M,N) ==> ~step(M) & step(N), jump(U,V,W,X,Y,Z) :- cell(U,V,Role) ==> ~cell(U,V,Role) & cell(U,V,blank), jump(U,V,W,X,Y,Z) :- cell(W,X,Role) ==> ~cell(W,X,Role) & cell(W,X,blank), jump(U,V,W,X,Y,Z) :- cell(U,V,Role) ==> ~cell(Y,Z,blank) & cell(Y,Z,Role), jump(U,V,W,X,Y,Z) :- control(Role) & score(Role,M) & incr(M,N) ==> ~score(Role,M) & score(Role,N), jump(U,V,W,X,Y,Z) :- control(black) ==> ~control(black) & control(red), jump(U,V,W,X,Y,Z) :- control(red) ==>
```

# ConnectFour



## Gamemaster

team\_rocket  
Sign Out

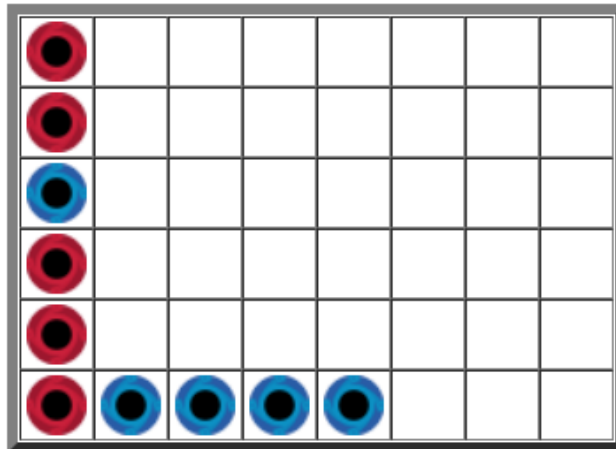
Protocol: manager

Identifier: tester\_team\_rocket

Game: connectfour

Startclock: 10

Playclock: 10



Game over

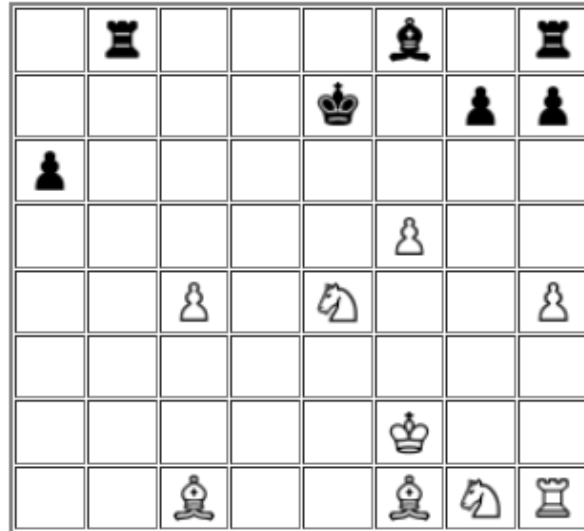
Roles	red	black
Players	team_rocket_mcs_id	onestep
Score	0	100
Errors	0	0

```
message(1651689429, tester_team_rocket, team_rocket_mcs_id, start(1, red, ruleset(rol
e(red), role(black), base(cell(X,Y,P)) :- column(X) & height(Y) &
role(P), base(control(red)), base(control(black)), action(drop(X)) :-
column(X), init(control(red)), legal(drop(X)) :- columnopen(X), drop(X) ::
control(Player) & columnempty(X) ==> cell(X,1,Player), drop(X) :: control(Player)
& cellopen(X,Y2) & succ(Y1,Y2) & ~cellopen(X,Y1) ==> cell(X,Y2,Player), drop(X)
:: control(red) ==> ~control(red) & control(black), drop(X) :: control(black) ==>
~control(black) & control(red), goal(red,100) :- line(red), goal(red,50) :-
~line(red) & ~line(black) & ~boardopen, goal(red,0) :- line(black), goal(red,0) :-
~line(red) & ~line(black) & boardopen, goal(black,100) :-
line(black), goal(black,50) :- ~line(red) & ~line(black) &
~boardopen, goal(black,0) :- line(red), goal(black,0) :- ~line(red) & ~line(black)
& boardopen, terminal :- line(red), terminal :- line(black), terminal :-
~boardopen, cellopen(X,Y) :- column(X) & height(Y) & ~cell(X,Y,red) &
~cell(X,Y,black), columnopen(X) :- cellopen(X,6), columnempty(X) :-
cellopen(X,1), boardopen :- columnopen(X), line(Player) :- cell(X1,Y,Player) &
succ(X1,X2) & succ(X2,X3) & succ(X3,X4) & cell(X2,Y,Player) & cell(X3,Y,Player)
& cell(X4,Y,Player), line(Player) :- cell(X,Y1,Player) & succ(Y1,Y2) &
succ(Y2,Y3) & succ(Y3,Y4) & cell(X,Y2,Player) & cell(X,Y3,Player) &
cell(X,Y4,Player), line(Player) :- cell(X1,Y1,Player) & succ(X1,X2) & succ(X2,X3)
& succ(X3,X4) & succ(Y1,Y2) & succ(Y2,Y3) & succ(Y3,Y4) & cell(X2,Y2,Player) &
cell(X3,Y3,Player) & cell(X4,Y4,Player), line(Player) :- cell(X1,Y4,Player) &
succ(X1,X2) & succ(X2,X3) & succ(X3,X4) & succ(Y3,Y4) & succ(Y2,Y3) &
succ(Y1,Y2) & cell(X2,Y3,Player) & cell(X3,Y2,Player) &
cell(X4,Y1,Player), succ(1,2), succ(2,3), succ(3,4), succ(4,5), succ(5,6), succ(6,7), s
ucc(7,8), column(1), column(2), column(3), column(4), column(5), column(6), column(7), c
olumn(8), height(1), height(2), height(3), height(4), height(5), height(6)),10,10))
start(black)
ready
message(1651689430, team_rocket_mcs_id, tester_team_rocket, reply(1, ready))
```

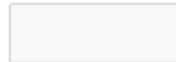
## Skirmish

Protocol: manager      Game: skirmish  
Identifier: tester\_team\_rocket      Startclock: 10  
Playclock: 10

Step: 35



Control: white



Roles	white	black
Players	team_rocket_mcs_id	onestep
Score	54	46
Errors	0	0

Clear    Begin    Pause    Resume    End

```
message(1651689513, tester_team_rocket, team_rocket_mcs_id, start(1, white, ruleset(r
ole(white), role(black), base(location(cell(X,Y), piece(R, king, 1))) :- file(X) &
rank(Y) & role(R), base(location(cell(X,Y), piece(R, queen, 1))) :- file(X) &
rank(Y) & role(R), base(location(cell(X,Y), piece(R, bishop, 1))) :- file(X) &
rank(Y) & role(R), base(location(cell(X,Y), piece(R, bishop, 2))) :- file(X) &
rank(Y) & role(R), base(location(cell(X,Y), piece(R, knight, 1))) :- file(X) &
rank(Y) & role(R), base(location(cell(X,Y), piece(R, knight, 2))) :- file(X) &
rank(Y) & role(R), base(location(cell(X,Y), piece(R, rook, 1))) :- file(X) & rank(Y)
& role(R), base(location(cell(X,Y), piece(R, rook, 2))) :- file(X) & rank(Y) &
role(R), base(location(cell(X,Y), piece(R, pawn, N))) :- file(X) & rank(Y) & role(R)
& rank(N), base(white(N)) :- interelement(0, N, 100), base(black(N)) :-
interelement(0, N, 100), base(control(Role)) :- role(Role), base(step(N)) :-
interelement(1, N, 50), action(move(piece(R, king, 1), cell(X,Y))) :- role(R) &
file(X) & rank(Y), action(move(piece(R, queen, 1), cell(X,Y))) :- role(R) & file(X)
& rank(Y), action(move(piece(R, bishop, 1), cell(X,Y))) :- role(R) & file(X) &
rank(Y), action(move(piece(R, bishop, 2), cell(X,Y))) :- role(R) & file(X) &
rank(Y), action(move(piece(R, knight, 1), cell(X,Y))) :- role(R) & file(X) &
rank(Y), action(move(piece(R, knight, 2), cell(X,Y))) :- role(R) & file(X) &
rank(Y), action(move(piece(R, rook, 1), cell(X,Y))) :- role(R) & file(X) &
rank(Y), action(move(piece(R, rook, 2), cell(X,Y))) :- role(R) & file(X) &
rank(Y), action(move(piece(R, pawn, N), cell(X,Y))) :- role(R) & rank(N) & file(X) &
rank(Y), interelement(M, M, N), interelement(M, Y, N) :- evaluate(plus(M, 1), X) &
evaluate(min(X, N), X) &
interelement(X, Y, N), init(location(cell(a, 8), piece(black, rook, 1))), init(location(
cell(b, 8), piece(black, knight, 1))), init(location(cell(c, 8), piece(black, bishop, 1))
), init(location(cell(d, 8), piece(black, queen, 1))), init(location(cell(e, 8), piece(b
lack, king, 1))), init(location(cell(f, 8), piece(black, bishop, 2))), init(location(cel
l(g, 8), piece(black, knight, 2))), init(location(cell(h, 8), piece(black, rook, 2))), ini
t(location(cell(a, 7), piece(black, pawn, 1))), init(location(cell(b, 7), piece(black, p
awn, 2))), init(location(cell(c, 7), piece(black, pawn, 3))), init(location(cell(d, 7), p
```

## Question 2

### Hamilton



Gamemaster

team\_rocket  
Sign Out

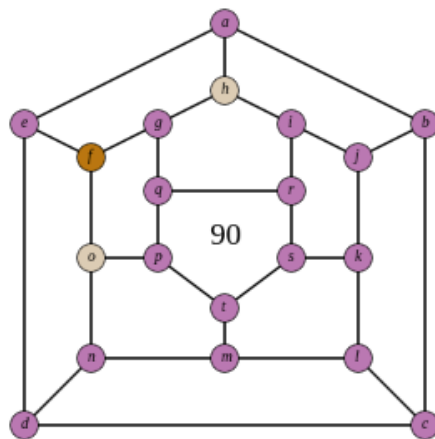
Protocol: manager

Identifier: tester\_team\_rocket

Game: hamilton

Startclock: 10

Playclock: 10



Roles	robot
Players	team_rocket_mcts
Score	90
Errors	0

Clear Begin Pause Resume End

```
message(1651652141, tester_team_rocket, team_rocket_mcts, start(1, robot, ruleset(rol
e(robot), base(location(X)) :- node(X), base(visited(X)) :-
node(X), base(score(0)), base(score(N)) :-
scorenext(M, N), base(step(1)), base(step(N)) :- successor(M, N), action(move(Y)) :-
node(Y), init(location(a)), init(visited(a)), init(score(1)), init(step(1)), init(con
trol(robot)), legal(move(Y)) :- location(X) & connected(X, Y), move(Y) :-
location(X) ==> ~location(X) & location(Y), move(Y) :: visited(Y), move(Y) ::
step(M) & successor(M, N) ==> ~step(M) & step(N), move(Y) :: ~visited(Y) &
score(M) & scorenext(M, N) ==> ~score(M) & score(N), goal(robot, N) :-
score(N), terminal :-
step(20), node(a), node(b), node(c), node(d), node(e), node(f), node(g), node(h), node(i)
, node(j), node(k), node(l), node(m), node(n), node(o), node(p), node(q), node(r), node(s)
, node(t), connected(a, b), connected(a, e), connected(a, h), connected(b, a), connected(b
, c), connected(b, j), connected(c, b), connected(c, d), connected(c, l), connected(d, c), c
onected(d, e), connected(d, n), connected(e, a), connected(e, d), connected(e, f), connect
ed(f, e), connected(f, g), connected(f, o), connected(g, f), connected(g, h), connected(g
, q), connected(h, a), connected(h, g), connected(h, i), connected(i, h), connected(i, j), c
onected(i, r), connected(j, b), connected(j, i), connected(j, k), connected(k, j), connect
ed(k, l), connected(k, s), connected(l, c), connected(l, k), connected(l, m), connected(m
, l), connected(m, n), connected(m, t), connected(n, d), connected(n, m), connected(n, o), c
onected(o, n), connected(o, f), connected(o, p), connected(p, o), connected(p, q), connect
ed(p, t), connected(q, g), connected(q, p), connected(q, r), connected(r, i), connected(r
, q), connected(r, s), connected(s, k), connected(s, r), connected(s, t), connected(t, m), c
onected(t, s), connected(t, p), scorenext(0, 1), scorenext(1, 2), scorenext(2, 4), scoren
ext(4, 6), scorenext(6, 9), scorenext(9, 12), scorenext(12, 16), scorenext(16, 20), scoren
ext(20, 25), scorenext(25, 30), scorenext(30, 36), scorenext(36, 42), scorenext(42, 49), s
corenext(49, 56), scorenext(56, 64), scorenext(64, 72), scorenext(72, 81), scorenext(81,
90), scorenext(90, 100), successor(1, 2), successor(2, 3), successor(3, 4), successor(4, 5
), successor(5, 6), successor(6, 7), successor(7, 8), successor(8, 9), successor(9, 10), su
ccessor(10, 11), successor(11, 12), successor(12, 13), successor(13, 14), successor(14, 1
```



## Hunter



# Gamemaster

team\_rocket  
Sign Out

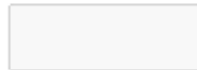
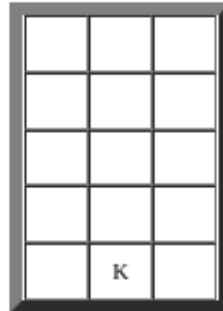
Protocol: manager

Identifier: tester\_team\_rocket

Game: hunter

Startclock: 10

Playclock: 20



<b>Roles</b>	robot
<b>Players</b>	team_rocket_mcts
<b>Score</b>	100
<b>Errors</b>	0

```
scoremap(0,0),scoremap(1,1),scoremap(2,3),scoremap(3,7),scoremap(4,11),scoremap(5,16),scoremap(6,22),scoremap(7,29),scoremap(8,37),scoremap(9,45),scoremap(10,54),scoremap(11,64),scoremap(12,75),scoremap(13,87),scoremap(14,100)),10,20))
message(1651652432,team_rocket_mcts,tester_team_rocket,reply(1,ready))
message(1651652433,tester_team_rocket,team_rocket_mcts,play(2,[]))
message(1651652451,team_rocket_mcts,tester_team_rocket,reply(2,move(1,1,2,3)))
message(1651652452,tester_team_rocket,team_rocket_mcts,play(3,move(1,1,2,3)))
message(1651652470,team_rocket_mcts,tester_team_rocket,reply(3,move(2,3,4,2)))
message(1651652471,tester_team_rocket,team_rocket_mcts,play(4,move(2,3,4,2)))
message(1651652489,team_rocket_mcts,tester_team_rocket,reply(4,move(4,2,2,1)))
message(1651652490,tester_team_rocket,team_rocket_mcts,play(5,move(4,2,2,1)))
message(1651652508,team_rocket_mcts,tester_team_rocket,reply(5,move(2,1,1,3)))
message(1651652510,tester_team_rocket,team_rocket_mcts,play(6,move(2,1,1,3)))
message(1651652527,team_rocket_mcts,tester_team_rocket,reply(6,move(1,3,3,2)))
message(1651652528,tester_team_rocket,team_rocket_mcts,play(7,move(1,3,3,2)))
message(1651652546,team_rocket_mcts,tester_team_rocket,reply(7,move(3,2,5,3)))
message(1651652547,tester_team_rocket,team_rocket_mcts,play(8,move(3,2,5,3)))
message(1651652565,team_rocket_mcts,tester_team_rocket,reply(8,move(5,3,4,1)))
message(1651652566,tester_team_rocket,team_rocket_mcts,play(9,move(5,3,4,1)))
message(1651652584,team_rocket_mcts,tester_team_rocket,reply(9,move(4,1,2,2)))
message(1651652585,tester_team_rocket,team_rocket_mcts,play(10,move(4,1,2,2)))
message(1651652603,team_rocket_mcts,tester_team_rocket,reply(10,move(2,2,4,3)))
message(1651652605,tester_team_rocket,team_rocket_mcts,play(11,move(2,2,4,3)))
message(1651652622,team_rocket_mcts,tester_team_rocket,reply(11,move(4,3,5,1)))
message(1651652624,tester_team_rocket,team_rocket_mcts,play(12,move(4,3,5,1)))
message(1651652641,team_rocket_mcts,tester_team_rocket,reply(12,move(5,1,4,3)))
message(1651652642,tester_team_rocket,team_rocket_mcts,play(13,move(5,1,4,3)))
message(1651652660,team_rocket_mcts,tester_team_rocket,reply(13,move(4,3,3,1)))
message(1651652661,tester_team_rocket,team_rocket_mcts,play(14,move(4,3,3,1)))
message(1651652679,team_rocket_mcts,tester_team_rocket,reply(14,move(3,1,1,2)))
```

## Alquerque

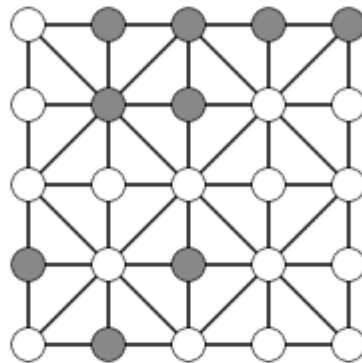


# Gamemaster

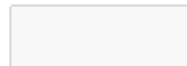
team\_rocket  
Sign Out

Protocol: manager  
Identifier: tester\_team\_rocket  
Game: alquerque  
Startclock: 10  
Playclock: 10

Step: 25



Control: red



Roles	red	black
Players	team_rocket_mcts	onestep
Score	10	100
Errors	0	0

Clear Begin Pause Resume End

```
legal(Move),distinctcell(U,V,X,Y) :- index(U) & index(X) & distinct(U,X) &
index(V) & index(Y),distinctcell(U,V,X,Y) :- index(V) & index(Y) & distinct(V,Y)
& index(U) & index(X),doublet(U,V,X,Y) :- horizontal(U,V,X,Y),doublet(U,V,X,Y)
:- horizontal(X,Y,U,V),doublet(U,V,X,Y) :- vertical(U,V,X,Y),doublet(U,V,X,Y) :-
vertical(X,Y,U,V),doublet(U,V,X,Y) :- slash(U,V,X,Y),doublet(U,V,X,Y) :-
slash(X,Y,U,V),doublet(U,V,X,Y) :- backslash(U,V,X,Y),doublet(U,V,X,Y) :-
backslash(X,Y,U,V),triplet(U,V,W,X,Y,Z) :- horizontal(U,V,W,X) &
horizontal(W,X,Y,Z),triplet(U,V,W,X,Y,Z) :- horizontal(Y,Z,W,X) &
horizontal(W,X,U,V),triplet(U,V,W,X,Y,Z) :- vertical(U,V,W,X) &
vertical(W,X,Y,Z),triplet(U,V,W,X,Y,Z) :- vertical(Y,Z,W,X) &
vertical(W,X,U,V),triplet(U,V,W,X,Y,Z) :- slash(U,V,W,X) &
slash(W,X,Y,Z),triplet(U,V,W,X,Y,Z) :- slash(Y,Z,W,X) &
slash(W,X,U,V),triplet(U,V,W,X,Y,Z) :- backslash(U,V,W,X) &
backslash(W,X,Y,Z),triplet(U,V,W,X,Y,Z) :- backslash(Y,Z,W,X) &
backslash(W,X,U,V),horizontal(U,V,X,V) :- nex(U,X) & index(V),vertical(U,V,U,Y)
:- nex(V,Y) &
index(U),slash(3,1,2,2),slash(2,2,1,3),slash(5,1,4,2),slash(4,2,3,3),slash(3,3,2
,4),slash(2,4,1,5),slash(5,3,4,4),slash(4,4,3,5),backslash(3,1,4,2),backslash(4
,2,5,3),backslash(1,1,2,2),backslash(2,2,3,3),backslash(3,3,4,4),backslash(4,4,5
,5),backslash(1,3,2,4),backslash(2,4,3,5),nex(1,2),nex(2,3),nex(3,4),nex(4,5),inc
r(0,10),incr(10,20),incr(20,30),incr(30,40),incr(40,50),incr(50,60),incr(60,70)
,incr(70,80),incr(80,90),incr(90,100),succ(1,2),succ(2,3),succ(3,4),succ(4,5),suc
c(5,6),succ(6,7),succ(7,8),succ(8,9),succ(9,10),succ(10,11),succ(11,12),succ(12
,13),succ(13,14),succ(14,15),succ(15,16),succ(16,17),succ(17,18),succ(18,19),succ
(19,20),succ(20,21),succ(21,22),succ(22,23),succ(23,24),succ(24,25),succ(25,26)
,succ(26,27),succ(27,28),succ(28,29),succ(29,30)),10,10)
start(black)
ready
message(1651654375,team_rocket_mcts,tester_team_rocket,reply(1,ready))
message(1651654376,tester_team_rocket,team_rocket_mcts,play(2,[]))
```



## Connectfour

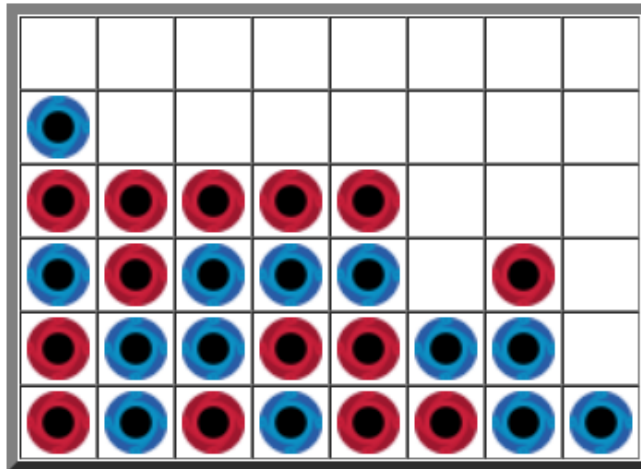


# Gamemaster

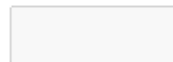
team\_rocket  
Sign Out

Protocol: manager  
Identifier: tester\_team\_rocket

Game: connectfour  
Startclock: 10  
Playclock: 10



Game over



Roles	red	black
Players	team_rocket_mcts	onestep
Score	100	0
Errors	0	0

Clear Begin Pause Resume End

```
message(1651653693, tester_team_rocket, team_rocket_mcts, start(1, red, ruleset(role(
red), role(black), base(cell(x, y, p)) :- column(x) & height(y) &
role(p), base(control(red)), base(control(black)), action(drop(x)) :-
column(x), init(control(red)), legal(drop(x)) :- columnopen(x), drop(x) :-
control(player) & columnempty(x) ==> cell(x, 1, player), drop(x) :- control(player)
& cellopen(x, y2) & succ(y1, y2) & ~cellopen(x, y1) ==> cell(x, y2, player), drop(x)
:- control(red) ==> ~control(red) & control(black), drop(x) :- control(black) ==>
~control(black) & control(red), goal(red, 100) :- line(red), goal(red, 50) :-
~line(red) & ~line(black) & ~boardopen, goal(black, 0) :- line(black), goal(black, 0) :-
~line(black) & ~line(black) & boardopen, goal(black, 100) :-
line(black), goal(black, 50) :- ~line(black) & ~line(black) &
~boardopen, goal(black, 0) :- line(black), goal(black, 0) :- ~line(black) & ~line(black)
& boardopen, terminal :- line(black), terminal :- line(black), terminal :-
~boardopen, cellopen(x, y) :- column(x) & height(y) & ~cell(x, y, red) &
~cell(x, y, black), columnopen(x) :- cellopen(x, 6), columnempty(x) :-
cellopen(x, 1), boardopen :- columnopen(x), line(player) :- cell(x1, y, player) &
succ(x1, x2) & succ(x2, x3) & succ(x3, x4) & cell(x2, y, player) & cell(x3, y, player)
& cell(x4, y, player), line(player) :- cell(x, y1, player) & succ(y1, y2) &
succ(y2, y3) & succ(y3, y4) & cell(x, y2, player) & cell(x, y3, player) &
cell(x, y4, player), line(player) :- cell(x1, y1, player) & succ(x1, x2) & succ(x2, x3)
& succ(x3, x4) & succ(y1, y2) & succ(y2, y3) & succ(y3, y4) & cell(x2, y2, player) &
cell(x3, y3, player) & cell(x4, y4, player), line(player) :- cell(x1, y4, player) &
succ(x1, x2) & succ(x2, x3) & succ(x3, x4) & succ(y3, y4) & succ(y2, y3) &
succ(y1, y2) & cell(x2, y3, player) & cell(x3, y2, player) &
cell(x4, y1, player), succ(1, 2), succ(2, 3), succ(3, 4), succ(4, 5), succ(5, 6), succ(6, 7), s
ucc(7, 8), column(1), column(2), column(3), column(4), column(5), column(6), column(7), c
olumn(8), height(1), height(2), height(3), height(4), height(5), height(6)), 10, 10))
start(black)
ready
message(1651653693, team_rocket_mcts, tester_team_rocket, reply(1, ready))
```

## Skirmish

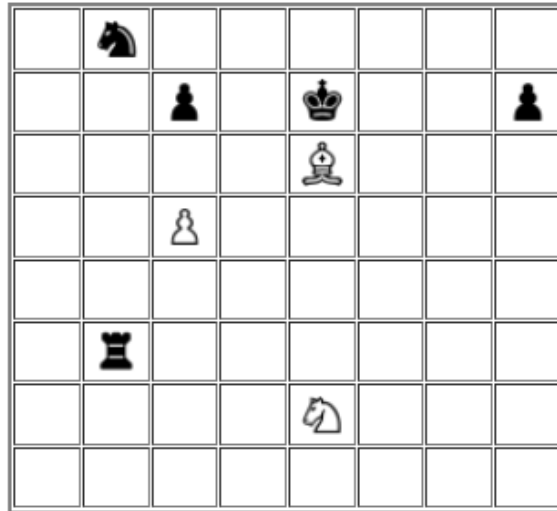


# Gamemaster

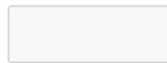
team\_rocket  
Sign Out

Protocol: manager      Game: skirmish  
Identifier: tester\_team\_rocket      Startclock: 10  
Playclock: 10

Step: 50



Control: black



Roles	white	black
Players	team_rocket_mcts	onestep
Score	36	64
Errors	0	0

Clear    Begin    Pause    Resume    End

```
message(1651654517, tester_team_rocket, team_rocket_mcts, start(1, white, ruleset(role(white), role(black), base(location(cell(X, Y), piece(R, king, 1))) :- file(X) & rank(Y) & role(R), base(location(cell(X, Y), piece(R, queen, 1))) :- file(X) & rank(Y) & role(R), base(location(cell(X, Y), piece(R, bishop, 1))) :- file(X) & rank(Y) & role(R), base(location(cell(X, Y), piece(R, bishop, 2))) :- file(X) & rank(Y) & role(R), base(location(cell(X, Y), piece(R, knight, 1))) :- file(X) & rank(Y) & role(R), base(location(cell(X, Y), piece(R, knight, 2))) :- file(X) & rank(Y) & role(R), base(location(cell(X, Y), piece(R, rook, 1))) :- file(X) & rank(Y) & role(R), base(location(cell(X, Y), piece(R, rook, 2))) :- file(X) & rank(Y) & role(R), base(location(cell(X, Y), piece(R, pawn, N))) :- file(X) & rank(Y) & role(R), base(location(cell(X, Y), piece(R, pawn, N))) :- file(X) & rank(Y) & role(R) & rank(N), base(white(N)) :- interelement(0, N, 100), base(black(N)) :- interelement(0, N, 100), base(control(Role)) :- role(Role), base(step(N)) :- interelement(1, N, 50), action(move(piece(R, king, 1), cell(X, Y))) :- role(R) & file(X) & rank(Y), action(move(piece(R, queen, 1), cell(X, Y))) :- role(R) & file(X) & rank(Y), action(move(piece(R, bishop, 1), cell(X, Y))) :- role(R) & file(X) & rank(Y), action(move(piece(R, bishop, 2), cell(X, Y))) :- role(R) & file(X) & rank(Y), action(move(piece(R, knight, 1), cell(X, Y))) :- role(R) & file(X) & rank(Y), action(move(piece(R, knight, 2), cell(X, Y))) :- role(R) & file(X) & rank(Y), action(move(piece(R, rook, 1), cell(X, Y))) :- role(R) & file(X) & rank(Y), action(move(piece(R, rook, 2), cell(X, Y))) :- role(R) & file(X) & rank(Y), action(move(piece(R, pawn, N), cell(X, Y))) :- role(R) & rank(N) & file(X) & rank(Y), interelement(M, N, N), interelement(M, Y, N) :- evaluate(plus(M, 1), X) & evaluate(min(X, N), X) & interelement(X, Y, N), init(location(cell(a, 8), piece(black, rook, 1))), init(location(cell(b, 8), piece(black, knight, 1))), init(location(cell(c, 8), piece(black, bishop, 1))), init(location(cell(d, 8), piece(black, queen, 1))), init(location(cell(e, 8), piece(black, king, 1))), init(location(cell(f, 8), piece(black, bishop, 2))), init(location(cell(g, 8), piece(black, knight, 2))), init(location(cell(h, 8), piece(black, rook, 2))), init(location(cell(a, 7), piece(black, pawn, 1))), init(location(cell(b, 7), piece(black, pawn, 2))), init(location(cell(c, 7), piece(black, pawn, 3))), init(location(cell(d, 7), p
```