

EXPERIMENT – 28

Write a python program to implement Alpha Beta pruning

Code:

```
# Python3 program to demonstrate

# working of Alpha-Beta Pruning

# Initial values of Alpha and Beta
MAX, MIN = 1000, -1000

# Returns optimal value for current player
#(Initially called for root and maximizer)
def minimax(depth, nodeIndex, maximizingPlayer,
           values, alpha, beta):

    # Terminating condition. i.e
    # leaf node is reached
    if depth == 3:
        return values[nodeIndex]

    if maximizingPlayer:

        best = MIN

        # Recur for left and right children
        for i in range(0, 2):
            val = minimax(depth + 1, nodeIndex * 2 + i,
                          False, values, alpha, beta)
            best = max(best, val)
            alpha = max(alpha, best)

    return best
```

```

# Alpha Beta Pruning

if beta <= alpha:
    break

return best

else:
    best = MAX

    # Recur for left and
    # right children
    for i in range(0, 2):

        val = minimax(depth + 1, nodeIndex * 2 + i,
                      True, values, alpha, beta)

        best = min(best, val)
        beta = min(beta, best)

    # Alpha Beta Pruning
    if beta <= alpha:
        break

return best

# Driver Code

if __name__ == "__main__":
    values = [3, 5, 6, 9, 1, 2, 0, -1]
    print("The optimal value is :", minimax(0, 0, True, values, MIN, MAX))

```

Output:

```
The optimal value is : 5  
...Program finished with exit code 0  
Press ENTER to exit console.[]
```