## 指令及多包粘连实例（代码为C#）

### 代码

static void Main(string[] args)

{

#region 指令转byte[]

///数据头

string header = "+-cmd-+",

///数据尾

footer = "-+end+-";

///将数据头和尾转为byte[]

var bHeader = Encoding.UTF8.GetBytes(header);

var bFooter = Encoding.UTF8.GetBytes(footer);

///指令头

int m1 = 1000, ///心跳

m2 = 2000, ///接受出币

m3 = 9000;///设置默认概率

///将指令头转为byte[]

var m1bs = BitConverter.GetBytes(m1);

var m2bs = BitConverter.GetBytes(m2);

var m3bs = BitConverter.GetBytes(m3);

///接受出币数据

var v2 = "{\"MessageID\":\"5af8ffa42157bc10d8ec90e3\",\"ClientID\":\"99999\",\"CoinCount\":1000,\"Chance\":100}";

///设置默认概率数据

var v3 = "{\"MessageID\":\"5af8ffa92157bc10d8ec90f3\",\"ClientID\":\"99999\",\"Chance\":100}";

Console.WriteLine($"测试数据：{header}{m1}{footer}{header}{m2}{v2}{footer}{header}{m3}{v3}{footer}");

///将数据转为byte[]

var b2v = Encoding.UTF8.GetBytes(v2);

var b3v = Encoding.UTF8.GetBytes(v3);

///将数据进行打包

var b1h = GetHeaderBytes(m1bs, bHeader, bFooter);

var b2h = GetHeaderBytes(m2bs, bHeader, bFooter, b2v);

var b3h = GetHeaderBytes(m3bs, bHeader, bFooter, b3v);

///模拟粘连后的总数据

var bSum = new byte[b1h.Length + b2h.Length + b3h.Length];

b1h.CopyTo(bSum, 0);

b2h.CopyTo(bSum, b1h.Length);

b3h.CopyTo(bSum, b2h.Length + b1h.Length);

Console.WriteLine("\nbyte[]数组输出:");

for (int i = 0; i < bSum.Length; i++)

{

Console.WriteLine($"{i}:{bSum[i]}");

}

#endregion

#region byte[]转指令

Console.WriteLine("\n所有数据直接转UTF8字符串：" + Encoding.UTF8.GetString(bSum));

///数据包头部下标集合

var bheaderLastIndexs = new List<int>();

///数据包尾部下标集合

var bFooterFirstIndexs = new List<int>();

///找到所有数据包的头部和尾部

for (int i = 0; i < bSum.Length; i++)

{

if (HasData(bHeader, bSum, i))

{

i = i + bHeader.Length - 1;

bheaderLastIndexs.Add(i + 1);

}

if (HasData(bFooter, bSum, i))

{

bFooterFirstIndexs.Add(i);

i = i + bFooter.Length - 1;

}

}

///将数据包去除头部和尾部的数据包列表

var dataList = new List<byte[]>();

if (bheaderLastIndexs.Count == bFooterFirstIndexs.Count)

{

for (int i = 0; i < bheaderLastIndexs.Count; i++)

{

dataList.Add(bSum.Skip(bheaderLastIndexs[i]).Take(bFooterFirstIndexs[i] - bheaderLastIndexs[i]).ToArray());

}

}

else///如果头部数量不等于尾部数量则为错误数据，不进行处理

return;

///获取真是数据

Console.WriteLine("\n从byte[]转为真实数据：");

foreach (var item in dataList)

{

var ht = GetHeaderValue(new byte[][] { m1bs, m2bs, m3bs }, item);

var v = "";

if (ht.Length < item.Length)

{

v = Encoding.UTF8.GetString(item, ht.Length, item.Length - ht.Length);

}

Console.WriteLine($"{BitConverter.ToInt32(ht, 0)}:{v}");

}

#endregion

Console.ReadLine();

}

/// <summary>

/// 从数据包中获取指令

/// </summary>

/// <param name="v">所有指令数组</param>

/// <param name="data">当前数据包</param>

/// <returns></returns>

private static byte[] GetHeaderValue(byte[][] v, byte[] data)

{

byte[] b = null;

foreach (var item in v)

{

var flag = true;

for (int i = 0; i < item.Length; i++)

{

if (item[0] != data[0])

{

flag = false;

break;

}

}

if (flag)

{

b = item;

break;

}

}

return b;

}

/// <summary>

/// 判断是否为数据头或者尾部

/// </summary>

/// <param name="bHeader"></param>

/// <param name="bSum"></param>

/// <param name="index"></param>

/// <returns></returns>

private static bool HasData(byte[] bHeader, byte[] bSum, int index)

{

var flag = true;

for (int i = 0; i < bHeader.Length; i++)

{

if (bHeader[i] != bSum[index + i])

{

flag = false;

break;

}

}

return flag;

}

/// <summary>

/// 对数据进行打包

/// </summary>

/// <param name="b1hs">指令代码byte[]</param>

/// <param name="bHeader">数据头</param>

/// <param name="bFooter">数据尾</param>

/// <param name="b2v">数据</param>

/// <returns></returns>

private static byte[] GetHeaderBytes(byte[] b1hs, byte[] bHeader, byte[] bFooter, byte[] b2v = null)

{

var b1h = b2v == null ? new byte[bHeader.Length + b1hs.Length + bFooter.Length] : new byte[bHeader.Length + b1hs.Length + b2v.Length + bFooter.Length];

bHeader.CopyTo(b1h, 0);

b1hs.CopyTo(b1h, bHeader.Length);

if (b2v != null)

{

b2v.CopyTo(b1h, b1hs.Length + bHeader.Length);

}

bFooter.CopyTo(b1h, b1h.Length - bFooter.Length);

return b1h;

}

}

### 输出内容：

测试数据：+-cmd-+1000-+end+-+-cmd-+2000{"MessageID":"5af8ffa42157bc10d8ec90e3","ClientID":"99999","CoinCount":1000,"Chance":100}-+end+-+-cmd-+9000{"MessageID":"5af8ffa92157bc10d8ec90f3","ClientID":"99999","Chance":100}-+end+-

byte[]数组输出:

0:43

1:45

2:99

3:109

4:100

5:45

6:43

7:232

8:3

9:0

10:0

11:45

12:43

13:101

14:110

15:100

16:43

17:45

18:43

19:45

20:99

21:109

22:100

23:45

24:43

25:208

26:7

27:0

28:0

29:123

30:34

31:77

32:101

33:115

34:115

35:97

36:103

37:101

38:73

39:68

40:34

41:58

42:34

43:53

44:97

45:102

46:56

47:102

48:102

49:97

50:52

51:50

52:49

53:53

54:55

55:98

56:99

57:49

58:48

59:100

60:56

61:101

62:99

63:57

64:48

65:101

66:51

67:34

68:44

69:34

70:67

71:108

72:105

73:101

74:110

75:116

76:73

77:68

78:34

79:58

80:34

81:57

82:57

83:57

84:57

85:57

86:34

87:44

88:34

89:67

90:111

91:105

92:110

93:67

94:111

95:117

96:110

97:116

98:34

99:58

100:49

101:48

102:48

103:48

104:44

105:34

106:67

107:104

108:97

109:110

110:99

111:101

112:34

113:58

114:49

115:48

116:48

117:125

118:45

119:43

120:101

121:110

122:100

123:43

124:45

125:43

126:45

127:99

128:109

129:100

130:45

131:43

132:40

133:35

134:0

135:0

136:123

137:34

138:77

139:101

140:115

141:115

142:97

143:103

144:101

145:73

146:68

147:34

148:58

149:34

150:53

151:97

152:102

153:56

154:102

155:102

156:97

157:57

158:50

159:49

160:53

161:55

162:98

163:99

164:49

165:48

166:100

167:56

168:101

169:99

170:57

171:48

172:102

173:51

174:34

175:44

176:34

177:67

178:108

179:105

180:101

181:110

182:116

183:73

184:68

185:34

186:58

187:34

188:57

189:57

190:57

191:57

192:57

193:34

194:44

195:34

196:67

197:104

198:97

199:110

200:99

201:101

202:34

203:58

204:49

205:48

206:48

207:125

208:45

209:43

210:101

211:110

212:100

213:43

214:45

所有数据直接转UTF8字符串：+-cmd-+? -+end+-+-cmd-+? {"MessageID":"5af8ffa42157bc10d8ec90e3","ClientID":"99999","CoinCount":1000,"Chance":100}-+end+-+-cmd-+(# {"MessageID":"5af8ffa92157bc10d8ec90f3","ClientID":"99999","Chance":100}-+end+-

从byte[]转为真实数据：

1000:

2000:{"MessageID":"5af8ffa42157bc10d8ec90e3","ClientID":"99999","CoinCount":1000,"Chance":100}

9000:{"MessageID":"5af8ffa92157bc10d8ec90f3","ClientID":"99999","Chance":100}