W2_COMPUTER PROGRAMMINING 2019 SPRING

EX 1

Write following program and save it as IO.java

```
 import java.util.Scanner;
import javax.swing.*;
import java.awt.Font;
class IO
{  static Scanner input = new Scanner( System.in );
   //change font and size for JOptionPane class,//example font "Arial"
   //example size 14
   public static void setOptionPane(String font,int size)
   {UIManager.put("OptionPane.messageFont", new Font(font, Font.PLAIN, size));}

   public static void print(String s)
   {JOptionPane.showMessageDialog(null,s);}

   public static void Cprint(String s)
   {System.out.print(s);}

   public static void Cprintln(String s)
   {System.out.println(s);}

  public static double DCinput(String s)
  {     System.out.print(s);
        return Double.parseDouble(input.next());}

  public static int ICinput(String s)
  {   Cprint(s);return input.nextInt();}

  public static String Cinput(String s)
  {     Cprint(s);return input.next();}

  public static double Dinput(String s)
  {     return Double.parseDouble(JOptionPane.showInputDialog(s));}

  public static int Iinput(String s)
  {     return Integer.parseInt(JOptionPane.showInputDialog(s));}

  public static String input(String s)
  {     return JOptionPane.showInputDialog(s);}
}
```

```
public class W2E1
{ public static void main(String arg[])
  {double x=IO.DCinput("x=");
   IO.Cprint(""+x);
  }
}
```

```
public class W2E1a
{ public static void main(String arg[])
  {double x=IO.Dinput("x=");
   IO.print(""+x);
  }
}
```

EX2 char variable

```
public class W2E2
{   //characres
  public static void main(String arg[])
  { char b1,b2,b3;
    b1='\u03B1';  // alfa
    b2='\u03B2';  // beta
    b3='\u03B3';  // gamma
    String s="alfa = "+b1+" beta="+b2+" gamma="+b3;
    IO.print(s);
  }
}
```

```
public class W2E2a
{   //characres
  public static void main(String arg[])
  { char b1,b2;
    b1='\u0394';   //big delta
    b2='\u00B2';   //Square sign
    String s=""+b1+"T ="+b1+"x"+b2+" + "+b1+"y"+b2;
    IO.print(s);
  }
}
```

EX 3 boolean variable

Boolean operator	Meaning
&&	and
||	or
!	not

```
public class W2E3
{   //boolean variables
  public static void main(String arg[])
  {  boolean b1=true;
                boolean b2=false;
                boolean b3=b1&&b2;
                boolean b4=b1||b2;
                boolean b5=!b1;
                String s="b1="+b1+"\n";
                s+="b2="+b2+"\n";
                s+="b3="+b3+"\n";
                s+="b4="+b4+"\n";
                s+="b5="+b5+"\n";
    IO.print(s);
  }
}
```

Boolean operators that operates on integer and real variables variables

Boolean operator	**Meaning**
>	Grater than
<	Smaller than
==	Equal to
>=	Greater than and equal to
<=	Smaller than and equal to
!=	Not equal to

```
 public class W2E3a
{   //boolean variables
                public static void main(String arg[])
                {
                 int x=3;
                 int y=4;
                 boolean b1=x>y;
                 boolean b2=x<y;
                 boolean b3=(x==y);
                 boolean b4=(x!=y);
                 boolean b5=!(x==y);
                 boolean b6=(x==y) && (x!=y);
                 boolean b7=b3 && b4;
                 String s="b1="+b1+"\n";
                 s+="b2="+b2+"\n";
                 s+="b3="+b3+"\n";
                 s+="b4="+b4+"\n";
                 s+="b5="+b5+"\n";
                 s+="b6="+b6+"\n";
                 s+="b7="+b7+"\n";
                 //JOptionPane.showMessageDialog(null,s)
                 IO.print(s);
                }
}
```

```
 public class W2E3a
```

```
{   //boolean variables
                public static void main(String arg[])
                {
                 int x=3;
                 int y=4;
                 boolean b1=x>y;
                 boolean b2=x<y;
                 boolean b3=(x==y);
                 boolean b4=(x!=y);
                 boolean b5=!(x==y);
                 boolean b6=(x==y) && (x!=y);
                 boolean b7=b3 && b4;
                 String s="b1="+b1+"\n";
                 s+="b2="+b2+"\n";
                 s+="b3="+b3+"\n";
                 s+="b4="+b4+"\n";
                 s+="b5="+b5+"\n";
                 s+="b6="+b6+"\n";
                 s+="b7="+b7+"\n";
                 //JOptionPane.showMessageDialog(null,s)
                 IO.print(s);
                }
}
```

```
 public class W2E3b
{   //boolean variables
                public static void main(String arg[])
                {
    String x=IO.input("isminizi giriniz");
    boolean b1=x.equals("Turhan");
                 String s="b1="+b1;
                 IO.print(s);
                }
}
```

EX 4 if statement

```
 public class W2E4
{   //boolean variables
                public static void main(String arg[])
                {
    String x=IO.input("enter your name");
    String t="Turhan";
    boolean b1=x.equals(t);
    String s="";
                 if(b1) {s="your name is "+t;}
                 else   {s="your name is not "+t;}
                 IO.print(s);
   }
}
```

```
 import java.io.*;
import javax.swing.JOptionPane;

class W2E4a
{
public static void main(String args[])
 {
 double x;
 double y;
 x=IO.Dinput(" x = ");
 y=IO.Dinput(" y = ");
 if(x<y)
 { IO.print(x+" is smaller than   "+y);}
 else if(x>y)
 { IO.print(x+" is bigger than   "+y);}
  else if(x==y)
 { IO.print(x+" is equal to  "+y);}
}
}
```

```
 import java.io.*; //java girdi cikti sinifini cagir
import javax.swing.JOptionPane;
```

```
class W2E4b
{
public static void main(String args[])
 {
 //Guess the color
 String s1;
 String s=IO.input(" Enter a color = ");
 boolean b1=s.equals("red");
 if(b1) {s1="  Correct guess color you enter is red";}
 else   {s1="  color you enter is not red, it is "+s;}
 JOptionPane.showMessageDialog(null,s1);
}
}
```

```
import java.io.*;
import javax.swing.JOptionPane;

class W2E4c
{
public static void main(String args[])
 {
 double x;
 double y=0;
 x=IO.Dinput(" x = ");
 if(x<3)
 { y=3.0*x+3;;}
 else if(x>=3 && x<5)
 { y=12+(x-3)*(x-3);}
  else
 { y=16.0+2.0*x*x-5.0;;}
 IO.Cprint("x="+x+"y="+y);
}}
```

HOMEWORK EXERCISES

Homework exercises will be done at home and will bring to next Thursday class printed no late exercises will be excepted. Each code should include student name id#, code plus results should be given. Homeworks will be accepted in written format plus a computer copy in pdf format will be sent to computer_programming@turhancoban.com adress your file name should be "group"+"week#"+studentname+studentid#.pdf

A_W1_turhan_coban_0101333.pdf

B_W3_ali_veli_02335646.pdf

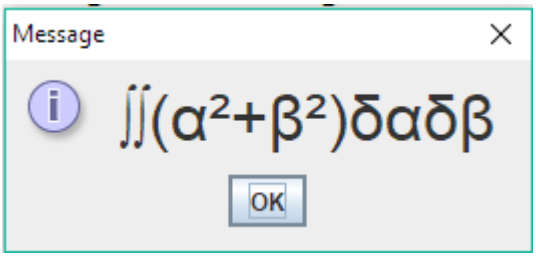
W2HW1

HW 1 By using ISO Unicode character codes write

$$\iint (\alpha^2 + \beta^2)\, \partial\alpha\partial\beta$$

into graphic screen by using **JOptionPane.showMessageDialog** method.

```
import javax.swing.*;
import java.awt.Font;
public class W2HW1
{ public static void main(String arg[])
  { UIManager.put("OptionPane.messageFont", new Font("Arial", Font.PLAIN, 32));
    char integral='\u222B';
    char alpha='\u03B1';
    char beta='\u03B2';
    char delta='\u03B4';
    char square='\u00B2';
  String s=""+integral+integral+"("+alpha+square+"+"+beta+square+")"+delta+alpha+delta+beta;
  JOptionPane.showMessageDialog(null,s);
  }
}
```



or

```
public class W2HW1
{ public static void main(String arg[])
  { IO.setOptionPane("Arial",32);
    char integral='\u222B';
    char alpha='\u03B1';
    char beta='\u03B2';
    char delta='\u03B4';
    char square='\u00B2';
  String s=""+integral+integral+"("+alpha+square+"+"+beta+square+")"+delta+alpha+delta+beta;
  IO.print(s);
  }
}
```

W1HW2

$y=f(x)=3.1x^2-1.23x+13.8$ if $x<2$

$y=f(x)=2x+5$ if $x\geq 2$

function is given. Write a program to calculate values for x=1.25, 2.3 and 5.6

input-output should be from console screen form (Scanner, input.next, System.out.println)

```
import java.util.Scanner;

public class W2HW2
{ public static double y(double x)
  {  double y=0.0;
     if(x<2.0) y=3.1*x*x-1.23*x+13.8;
     else      y=2.0*x+5.0;
                 return y;
  }
  public static void main(String arg[])
  { Scanner input = new Scanner( System.in );
    System.out.print("x1=");
    double x1=Double.parseDouble(input.next());
    String s="x="+x1+" y="+y(x1)+"\n";
    System.out.print("x2=");
    double x2=Double.parseDouble(input.next());
    s+="x="+x2+" y="+y(x2)+"\n";
    System.out.print("x3=");
    double x3=Double.parseDouble(input.next());
    s+="x="+x3+" y="+y(x3)+"\n";
    System.out.println(s);
  }
}
```

W1HW3

$y=f(x)=3.1x^2-1.23x+13.8$ if $x<2$

$y=f(x)=2*x+5;$ if $x\geq 2$ && $x<5$

$y=f(x)=5x^2+5x-3$ if $x\geq 5$

function is given. Write a program to calculate values for x=1.25, 2.3 and 5.6

input-output should be from graphic screen form (**JOptionPane.showMessageDialog, JOptionPane.showInputDialog**)

```
import javax.swing.*;
public class W2HW3
{
  public static double y(double x)
  {  double y=0.0;
     if(x<2.0) y=3.1*x*x-1.23*x+13.8;
```

```
    else if(x>=2 && x<5) y=2.0*x+5.0;
    else y=5.0*x*x+5*x-3.0;
            return y;
  }
  public static void main(String arg[])
  { double x1=Double.parseDouble(JOptionPane.showInputDialog("x1="));
    String s="x="+x1+" y="+y(x1)+"\n";
    double x2=Double.parseDouble(JOptionPane.showInputDialog("x2="));
    s+="x="+x2+" y="+y(x2)+"\n";
    double x3=Double.parseDouble(JOptionPane.showInputDialog("x2="));
    s+="x="+x3+" y="+y(x3)+"\n";
    JOptionPane.showMessageDialog(null,s);
  }
}
```

Summary of Java Statements

Console Input	**GUI Input Dialog**
Scanner input = **new** Scanner(System.in); **int** intValue = input.nextInt(); **long** longValue = input.nextLong(); **double** doubleValue = input.nextDouble(); **float** floatValue = input.nextFloat(); String string = input.next(); **Console Output** System.out.println(anyValue);	String string = JOptionPane.showInputDialog("Enter input"); **int** intValue = Integer.parseInt(string); **double** doubleValue = Double.parseDouble(string); **Message Dialog** JOptionPane.showMessageDialog(**null**, "Enter input");

Primitive Data Types	**Arithmetic Operators**	**Assignment Operators**
byte 8 bits (from -128 to 127) **short** 16 bits (From -32768 to 32767) **int** 32 bits (From -2157483648 to 2147483647) **long** 64 bits (From -9223372036854775808 to 9223372036854775808) **float** 32 bits (From -3.40292347e+38 to 3.40292347e+38) **double** 64 bits (From 1.7976931348623157e+308 to 1.7976931348623157e+308) **char** 16 bits (Unicode) **boolean** 1 bit (true/false)	+ addition - subtraction ***** multiplication / division **%** remainder **++var** preincrement **--var** predecrement **var++** postincrement **var--** postdecrement	= assignment **+=** addition assignment **-=** subtraction assignment ***=** multiplication assignment **/=** division assignment **%=** remainder assignment

Relational Operators	**Logical Operators**	**if** (condition1) {statements;} **else if** (condition2) {statements;} **else if** (condition3) {statements;} …… **else** {statements;}
< less than <= less than or equal to > greater than >= greater than or equal to == equal to **!=** not equal	**&&** short circuit AND **||** short circuit OR **!** NOT ^ exclusive OR	

switch Statements	**While and do-while loop Statements**	**For loop statements**

switch (intExpression) {
case value1:
statements;
break;
...
case valuen:
statements;
break;
default:
statements;
}
	while (condition) {
	statements;
	}
	
	do {
	statements;
	} **while** (condition);
		for (init; condition;adjustment)
		{
		statements;
		}

Frequently Used Static Constants/Methods	**Array/Length/Initializer**
Math.PI Math.exp() Math.random() Math.pow(a, b) System.currentTimeMillis() System.out.println(anyValue) JOptionPane.showMessageDialog(**null**, message)	**int**[] list = **new int**[10]; list.length; **int**[] list = {1, 2, 3, 4}; **Multidimensional Array/Length/Initializer** **int**[][] list = new **int**[10][10]; list.length; list[0].length;

JOptionPane.showInputDialog(prompt-message) Integer.parseInt(string) Double.parseDouble(string) Arrays.sort(type[] list) Arrays.binarySearch(type[] list, type key)	**int**[][] list = {{1, 2}, {3, 4}};

Table 2.2.3 Some unicode character tables

	000	001	002	003	004	005	006	007
0	NUL 0000	DLE 0010	SP 0020	0 0030	@ 0040	P 0050	` 0060	p 0070
1	SOH 0001	DC1 0011	! 0021	1 0031	A 0041	Q 0051	a 0061	q 0071
2	STX 0002	DC2 0012	" 0022	2 0032	B 0042	R 0052	b 0062	r 0072
3	ETX 0003	DC3 0013	# 0023	3 0033	C 0043	S 0053	c 0063	s 0073
4	EOT 0004	DC4 0014	$ 0024	4 0034	D 0044	T 0054	d 0064	t 0074
5	ENQ 0005	NAK 0015	% 0025	5 0035	E 0045	U 0055	e 0065	u 0075
6	ACK 0006	SYN 0016	& 0026	6 0036	F 0046	V 0056	f 0066	v 0076
7	BEL 0007	ETB 0017	' 0027	7 0037	G 0047	W 0057	g 0067	w 0077
8	BS 0008	CAN 0018	(0028	8 0038	H 0048	X 0058	h 0068	x 0078
9	HT 0009	EM 0019	) 0029	9 0039	I 0049	Y 0059	i 0069	y 0079
A	LF 000A	SUB 001A	* 002A	: 003A	J 004A	Z 005A	j 006A	z 007A
B	VT 000B	ESC 001B	+ 002B	; 003B	K 004B	[005B	k 006B	{ 007B
C	FF 000C	FS 001C	, 002C	< 003C	L 004C	\ 005C	l 006C	| 007C
D	CR 000D	GS 001D	- 002D	= 003D	M 004D	] 005D	m 006D	} 007D
E	SO 000E	RS 001E	. 002E	> 003E	N 004E	^ 005E	n 006E	~ 007E
F	SI 000F	US 001F	/ 002F	? 003F	O 004F	_ 005F	o 006F	DEL 007F

	008	009	00A	00B	00C	00D	00E	00F
0	XXX 0080	DCS 0090	NB SP 00A0	° 00B0	À 00C0	Ð 00D0	à 00E0	ð 00F0
1	XXX 0081	PU1 0091	¡ 00A1	± 00B1	Á 00C1	Ñ 00D1	á 00E1	ñ 00F1
2	BPH 0082	PU2 0092	¢ 00A2	² 00B2	Â 00C2	Ò 00D2	â 00E2	ò 00F2
3	NBH 0083	STS 0093	£ 00A3	³ 00B3	Ã 00C3	Ó 00D3	ã 00E3	ó 00F3
4	IND 0084	CCH 0094	¤ 00A4	´ 00B4	Ä 00C4	Ô 00D4	ä 00E4	ô 00F4
5	NEL 0085	MW 0095	¥ 00A5	µ 00B5	Å 00C5	Õ 00D5	å 00E5	õ 00F5
6	SSA 0086	SPA 0096	¦ 00A6	¶ 00B6	Æ 00C6	Ö 00D6	æ 00E6	ö 00F6
7	ESA 0087	EPA 0097	§ 00A7	· 00B7	Ç 00C7	× 00D7	ç 00E7	÷ 00F7
8	HTS 0088	SOS 0098	¨ 00A8	¸ 00B8	È 00C8	Ø 00D8	è 00E8	ø 00F8
9	HTJ 0089	XXX 0099	© 00A9	¹ 00B9	É 00C9	Ù 00D9	é 00E9	ù 00F9
A	VTS 008A	SCI 009A	ª 00AA	º 00BA	Ê 00CA	Ú 00DA	ê 00EA	ú 00FA
B	PLD 008B	CSI 009B	« 00AB	» 00BB	Ë 00CB	Û 00DB	ë 00EB	û 00FB
C	PLU 008C	ST 009C	¬ 00AC	¼ 00BC	Ì 00CC	Ü 00DC	ì 00EC	ü 00FC
D	RI 008D	OSC 009D	SHY 00AD	½ 00BD	Í 00CD	Ý 00DD	í 00ED	ý 00FD
E	SS2 008E	PM 009E	® 00AE	¾ 00BE	Î 00CE	Þ 00DE	î 00EE	þ 00FE
F	SS3 008F	APC 009F	¯ 00AF	¿ 00BF	Ï 00CF	ß 00DF	ï 00EF	ÿ 00FF

0180 **Latin Extended-B** 024F 0370 **Greek and Coptic** 03FF

	018	019	01A	01B	01C	01D	01E	01F	020	021	022	023	024
0	ƀ 0180	Ɛ 0190	Ơ 01A0	ư 01B0	ǀ 01C0	ǝ 01D0	Ā 01E0	ǰ 01F0	À 0200	Ȑ 0210	ɳ 0220	Ō 0230	ɀ 0240
1	Ɓ 0181	Ƒ 0191	ơ 01A1	Ʊ 01B1	ǁ 01C1	Ǒ 01D1	ā 01E1	DZ 01F1	à 0201	ȑ 0211	ɖ 0221	ō 0231	ɂ 0241
2	Ƃ 0182	ƒ 0192	Ƣ 01A2	Ʋ 01B2	ǂ 01C2	ǒ 01D2	Ē 01E2	Dz 01F2	Â 0202	Ȓ 0212	ȣ 0222	Ȳ 0232	ɂ 0242
3	ƃ 0183	Ɠ 0193	ƣ 01A3	Ƴ 01B3	! 01C3	Ǔ 01D3	ē 01E3	dz 01F3	â 0203	ȓ 0213	ȣ 0223	ȳ 0233	Ƀ 0243
4	Ƅ 0184	ɣ 0194	Ƥ 01A4	ƴ 01B4	DŽ 01C4	ǔ 01D4	Ġ 01E4	Ǵ 01F4	È 0204	Ù 0214	Ȝ 0224	ɻ 0234	Ʉ 0244
5	ƅ 0185	ƕ 0195	ƥ 01A5	Ƶ 01B5	Dž 01C5	Ǖ 01D5	ġ 01E5	ǵ 01F5	è 0205	ù 0215	ȝ 0225	ɲ 0235	Ʌ 0245
6	Ɔ 0186	ɩ 0196	Ʀ 01A6	ƶ 01B6	dž 01C6	ǖ 01D6	Ǧ 01E6	Ƕ 01F6	Ê 0206	Û 0216	Ȧ 0226	ȶ 0236	Ɇ 0246
7	Ƈ 0187	Ɨ 0197	Ƨ 01A7	Ʒ 01B7	LJ 01C7	Ǘ 01D7	ǧ 01E7	ƿ 01F7	ê 0207	û 0217	ȧ 0227	ȷ 0237	ɇ 0247
8	ƈ 0188	Ƙ 0198	ƨ 01A8	Ǯ 01B8	Lj 01C8	ǘ 01D8	Ǩ 01E8	Ǹ 01F8	Ì 0208	Ș 0218	Ȩ 0228	ȸ 0238	Ɉ 0248
9	Ɖ 0189	ƙ 0199	Σ 01A9	ǯ 01B9	lj 01C9	Ǚ 01D9	ǩ 01E9	ǹ 01F9	ì 0209	ș 0219	ȩ 0229	ȹ 0239	ɉ 0249
A	Ɗ 018A	ƚ 019A	ƪ 01AA	ƺ 01BA	NJ 01CA	ǚ 01DA	Ǫ 01EA	Ǻ 01FA	Î 020A	Ț 021A	Ȫ 022A	Ⱥ 023A	Ɋ 024A
B	Ƌ 018B	ƛ 019B	ƫ 01AB	Ƹ 01BB	Nj 01CB	Ǜ 01DB	ǫ 01EB	ǻ 01FB	î 020B	ț 021B	ȫ 022B	Ȼ 023B	ɋ 024B
C	ƌ 018C	Ɯ 019C	Ƭ 01AC	Ʒ 01BC	nj 01CC	ǜ 01DC	Ǭ 01EC	Ǽ 01FC	Ò 020C	Ɜ 021C	Ȭ 022C	ȼ 023C	Ʀ 024C
D	ƍ 018D	Ɲ 019D	ƭ 01AD	ƽ 01BD	Ǎ 01CD	ǝ 01DD	ǭ 01ED	ǽ 01FD	ò 020D	ɜ 021D	ȭ 022D	Ƚ 023D	ɍ 024D
E	Ǝ 018E	ƞ 019E	Ʈ 01AE	ƾ 01BE	ǎ 01CE	Ǟ 01DE	Ǯ 01EE	Ǿ 01FE	Ô 020E	Ȟ 021E	Ȯ 022E	Ɏ 023E	Ɏ 024E
F	Ə 018F	Ɵ 019F	Ư 01AF	ƿ 01BF	Ǐ 01CF	ǟ 01DF	ǯ 01EF	ǿ 01FF	ô 020F	ȟ 021F	ȯ 022F	ȿ 023F	ɏ 024F

	037	038	039	03A	03B	03C	03D	03E	03F
0	Ͱ 0370		ΐ 0390	Π 03A0	ΰ 03B0	π 03C0	ϐ 03D0	Ϣ 03E0	ϰ 03F0
1	ͱ 0371		Α 0391	Ρ 03A1	α 03B1	ρ 03C1	ϑ 03D1	ϣ 03E1	ϱ 03F1
2	Ͳ 0372		Β 0392		β 03B2	ς 03C2	ϒ 03D2	Ϥ 03E2	ϲ 03F2
3	ͳ 0373		Γ 0393	Σ 03A3	γ 03B3	σ 03C3	ϓ 03D3	ϥ 03E3	ϳ 03F3
4	ʹ 0374	΄ 0384	Δ 0394	Τ 03A4	δ 03B4	τ 03C4	ϔ 03D4	Ϧ 03E4	ϴ 03F4
5	͵ 0375	΅ 0385	Ε 0395	Υ 03A5	ε 03B5	υ 03C5	ϕ 03D5	ϧ 03E5	ϵ 03F5
6	Ͷ 0376	Ά 0386	Ζ 0396	Φ 03A6	ζ 03B6	φ 03C6	ϖ 03D6	Ϩ 03E6	϶ 03F6
7	ͷ 0377	· 0387	Η 0397	Χ 03A7	η 03B7	χ 03C7	ϗ 03D7	ϩ 03E7	Ϸ 03F7
8		Έ 0388	Θ 0398	Ψ 03A8	θ 03B8	ψ 03C8	Ϙ 03D8	Ϫ 03E8	ϸ 03F8
9		Ή 0389	Ι 0399	Ω 03A9	ι 03B9	ω 03C9	ϙ 03D9	ϫ 03E9	Ϲ 03F9
A	ͺ 037A	Ί 038A	Κ 039A	Ϊ 03AA	κ 03BA	ϊ 03CA	Ϛ 03DA	Ϭ 03EA	Ϻ 03FA
B	ͻ 037B		Λ 039B	Ϋ 03AB	λ 03BB	ϋ 03CB	ϛ 03DB	ϭ 03EB	ϻ 03FB
C	ͼ 037C	Ό 038C	Μ 039C	ά 03AC	μ 03BC	ό 03CC	Ϝ 03DC	Ϯ 03EC	ϼ 03FC
D	ͽ 037D		Ν 039D	έ 03AD	ν 03BD	ύ 03CD	ϝ 03DD	ϯ 03ED	Ͻ 03FD
E	; 037E	Ύ 038E	Ξ 039E	ή 03AE	ξ 03BE	ώ 03CE	Ϟ 03DE	ϰ 03EE	Ͼ 03FE
F		Ώ 038F	Ο 039F	ί 03AF	ο 03BF	Ϗ 03CF	ϟ 03DF	ϱ 03EF	Ͽ 03FF