

Solution Midterm

Q1. Solve all parts on answer sheet attached.

(10+15+20=45 Points)

Part 1: Choose valid option for each of the following?

Bold options are answers

a. $3+5*4-2$ A. 30 B. 30 C. 21 D. 13	b. $2+(3+5)*(6-2)$ A. 34 B. 40 C. 58 D. 60
c. $9/4$ A. 1 B. 1.25 C. 2.25 D. 2	d. $7\%4$ A. 3 B. 1 C. 1.75 D. 2.25
e. "abcdefgh".charAt(4) A. d B. e C. 4 D. 5	f. "abcdefgh".indexOf() [Wrong argument missing] A. 34 B. 40 C. 58 D. 60
g. "abcdefgh".substring(2,5) A. bcd B. bc C. cde D. cd	h. ? ("12\b34"+'\b'+ "56"); A. 12456 B. 12\b34\b56 C. 1\b3\b56 D. 1356
i. int x=7, y=4; ?("x/y:"+x/y); A. x/y:1.75 B. x/y:1 C. x/y1.75 D. x/y1	j. int x=7; double y=4; ?("x\\y."+x/y); A. x\\y.1 B. x\\y.1.75 C. x y.1.75 D. x y.1

Part 2: Mention syntax, logical and run-time error(s) if any in the following codes with reason. There may be more than 1 error(s) in any part, mention all of them. In case of no error clearly write "No Error". Don't leave blank. (10 Points)

[Answers given in bold]

a. String s="This is."; if (s.charAt(4)==' ') ? ("Found"); ? ("Well Done"); else [else without if] ? ("Not Found");	b. String s="This is."; ? ("First Word:"); ?ln (s.substring(0,3)); //4 instead of 3 ? ("String Length is:"); ?ln (s.length());
c. String s="This is."; for (i=0;i<s.length();i++) if (s.charAt(i)==' ') ? ("Space Found"); else ? ("Space not found"); else is wrong because space may occur	d. String s="Please help me."; ?ln ("Printing word by word"); for (i=0;i<s.length();i++) if (s.charAt(i)==' ') ?ln (); else ? (s.charAt(i)); No error
e. int count=1; for (i=1;i<=10;i++) if (i%3==0) count++; ? (count+" numbers are divisible"); ?ln (" by 3"); count should be initialized by 0	f. //input m to print grade if (m < 50) ? ("F"); if (m < 60) ? ("D"); if (m < 70) ? ("C"); if (m < 80) ? ("B"); if (m >=80) ? ("A"); else if or composite condition required

<p>g. <code>String s="Do not take tension"; ?ln ("Printing word by word"); for (i=1;i<=s.length();i++) if (s.charAt(i)==' ') ?ln (); else ? (s.charAt(i));</code> index starts from 0 and goes to length-1, therefore I should be initialized by 1 and < instead of <=required</p>	<p>h. <code>? ("Printing square of stars"); ?ln (" of size 5 by 5 "); for (i=1;i<=5;i++) for (j=1;j<=5;j++) ?("*"); ?ln ();</code> ?ln is out of loop, block is required to take this statement inside outer loop</p>
<p>i. <code>? ("Printing 10 multiples of 3 - 5"); ?ln (" line by line "); for (i=3;i<=5;i++) for (j=1;j<=10;j++){ ?(i*j+" "); if (j==11) ?ln (); }</code> Curly braces should be in outer loop instead of inner loop to move to next line</p>	<p>j. <code>class Mid{ public static void main(String []a){ ?ln("Keep Hope!"+"cube(2));}; } public static int cube(int n){ ? ("Cube"+(n*n*n)); return n*n*n; } }</code> Cube has print statement therefore print</p>

Part 3: Mention Output of the codes if there is no output clearly mention "No Output"?

Note: Using variable without declaration is not an error.

<p>Consider these variables for part a to d: int a=7,b=3; double d1=2.3, d2=2, d3=1.5;</p>	
<p>a. <code>? ("**:"+b*d3+"\n"+d2*d1+"\ta*b"); ?ln ((int)d1*7+"\n"+d3*3+"\t"+d1); ?ln ((int)(d3*d2)+"::"+(int)d3*d2); **:4.5 3.0^^^^^a*b16.1 4.5^^^^^2.33::2.0</code></p>	<p>b. <code>String s="This is where I am?"; ?(s.substring(b,a)+ "::-"); ?(s.indexOf(' ',5)+ "\n"+s.length()); s is::7 19</code></p>
<p>c. <code>String s="This is."; if (a+b==d3*4) System.out.print("<Nice>"); else System.out.print("<Not Nice>"); System.out.print("<So So>"); <Not Nice><So So></code></p>	<p>d. <code>if (a/b>2) System.out.print("<A>"); else if (a/b==2 && a%b==2) System.out.print(""); else if (a/b>2 !(a%b==1)) System.out.print("<C>"); No Output</code></p>
<p>int i,j; String s1="Time to repent to Allah";//for part e & f</p>	
<p>e. <code>for (i=5;s1.charAt(i)!='p';i++) ?(s1.charAt(i)+","); ?("^"+i+"^"); ?((char)(s1.charAt(i)+2)); t,o ,r,e,^10^r</code></p>	<p>f. <code>for (i=0,j=0;i<2;j++){ if (s1.charAt(j)==' ') i++; ?(s1.charAt(j)+","); } T,i,m,e ,t,o ,</code></p>

<p>g. for (i=1;i<=4;i++){ ?("<"); for (j=1;j<=4;j++){ if (i==j){ ?(""+j); j++; } else ?("*"); ?ln(">"); } <*1**> <**2*> <***3> <****4></p>	<p>h. for (i=2;i<=6;i=i+2){ ?("<"); for (j=1;j<=i;j++){ ?("-"); ?(i/2); for (j=1;j<=i;j++){ ?("-"); ?ln(">"); } <--1--> <-----2-----> <-----3-----></p>	
<p>i. f1(2); f1(3); f1(5); public static void f1(int n){ ?ln(n+": "+n*n); } 2:4 3:9 5:25</p>	<p>j. t=5; for (t=5;t<=6;t++){ ?ln(pr(t)); 3,4,5,13 3,4,5,6,19</p>	<p>PS int pr(int n){ int i,pr=1; String s=""; for(i=3;i<=n;i++){ ?(i+","); pr=pr+i; } return pr; }</p>

Q2. (15+20=35 Points)

Part 1: Write complete programs for following descriptions using proper convention & indentation? (7+8)

a. Write program to print arrow using print statements as shown on right hand side, count spaces carefully?

```
class Arrow{
    public static void main(String []args){
        ?ln ("    *");
        ?ln ("    *");
        ?ln ("*****");
        ?ln ("    *");
        ?ln ("    *");
    }
}
```

```

*
*
*****
*
*

```

b. Write program to calculate x where $x = \frac{2}{3}y$. Input y with proper message. Print x (use complete division)?

```
import java.util.*;
class Ratio{
    public static void main(String []args){
        int y;
        ?ln ("Enter Y:");
        Scanner in=new Scanner(System.in);
        y=in.nextInt();
        ?ln ("X:"+2.0/3*y);
    }
}
```

Part 2: Complete codes without modifying given code, you must write program using given code? (2+3+3+4+4+4)

- a. Fill print statement to produce given output?

```
String s="Remember";
for (i=0;i<8;i++)
    ? ( s.charAt(i) + "-" );/Fill
```

Output:

R-e-m-e-m-b-e-r-

- b. Fill code to produce given output, without adding any loop?

```
for (i=1;i<=4;i++){
    for (j=1;j<=4;j++){
        if (i==j)
            ?(*);
            ?(j);
    }
    System.out.println();
}
```

Output:

* 1 2 3 4

1 * 2 3 4

1 2 * 3 4

1 2 3 * 4

- c. Complete code to get v2 randomly. Your code must generate v2 until value is more than double value of v1?

```
double v1, v2;
v1=Math.random()*10;
do{
    v2=Math.random()*30;
}while(v2<v1*2);
```

- d. Complete code to print 5 random values from -50 to 150. Show output as given on right hand side? (... mean values)

```
int n, val;
for (n=1;n<=5;n++){
    val=(int)(Math.random()*200-50);
    ?ln ("Value "+n+": "+val);
}
```

Output:

Value 1: ...

Value 2: ...

Value 3: ...

Value 4: ...

Value 5: ...

- e. Call
- printD*
- method in main to print
- 532**
- in first line and
- 4687**
- in second line?

```
PSVM (String []args){
    int x=5324687;
    printD(x,0,2);
    printD(x,3,6);
}
```

```
PSV printD(int n, int start, int end){
    String s=""+"n;
    for (int i=start;i<=end;i++)
        System.out.print(s.charAt(i));
    System.out.println();
}
```

- f. Write method
- isHalf*
- to receive two integer parameters and return true if first parameter is half of second parameter?

```
public static boolean isHalf(int x, int y){
    if (x==y/2) return true;
    return false;
    // or simply write return x==y/2;
}
```