

Major Exam 01  
Wednesday, 1<sup>st</sup> November 2006  
Time: 90 minutes

Q. 1: [3 marks each \* 5 = 15 marks] Give output for each of the following code in the space provided:

(a)

```
public class Q1
{
    public static void main(String[] args)
    {
        int ctemp = 37, ftemp;
        ftemp = 9*ctemp/5 + 32.0;
        System.out.println("ftemp = " + ftemp);
    }
}
```

(b)

```
char ch;
String test2 = "abcd";
String test = new String("abcd");
if(test.equals(test2))
{
    if(test == test2)
        ch = test.charAt(0);
    else
        ch = test.charAt(1);
}
else
{
    if(test == test2)
        ch = test.charAt(2);
    else
        ch = test.charAt(3);
}
System.out.println(ch);
```

(c)

```
int i=1;
switch (i)
{
    case 0:
        System.out.println("zero");
        break;
    case 1:
        System.out.print("one");
    case 2:
        System.out.println("two");
    default:
        System.out.println("default");
}
```

(d)

```
int i,j,k;
for (i = 0; i < 3; i++)
{
    for(j=1; j < 4; j++)
    {
        for(k=2; k<5; k++)
        {
            if((i == j) && (j==k))
                System.out.println(i);
        }
    }
}
```

(e)

```
int i , j;
i = j = 3;
int n = 2 * ++i;
int m = 2 * j++;
System.out.println(i + " " + j + " " + n + " " + m);
```

Q. 2: [8 marks] Design and implement a program which takes two integers as input from the user, then calculates and prints their sum, difference, product, and average.

For example, if user types 10, 25, the program prints The sum of 10 and 25 is 35.

The difference between 10 and 25 is -15.

The product of 10 and 25 is 250.

The average of 10 and 25 is 17.5.

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Q. 3: [10 marks] Design and implement a program that prints multiplication tables up to  $n$ , where  $n$  is an integer entered by the user.

For example, if the input is 5, the program prints

$$1 \times 1 = 1$$

$$1 \times 2 = 2$$

...

$$1 \times 10 = 10$$

...

$$5 \times 10 = 50$$

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Q. 4: [15 marks] Design and implement a program that computes the tax payable by an Australian taxpayer based on the following table:

Income	Tax
$\leq 6000$	Nil
$> 6000$ and $\leq 20000$	20% of (Income – 6000)
$> 20000$ and $\leq 50000$	2400 + 30% of (Income – 20000)
$> 50000$	11400 + 40% of (Income – 50000)

The program asks the user to enter his income. The program then outputs the tax payable.

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Q. 5: [12 marks] Write a program that calculates and prints all factors of an integer (positive) input.

For example, if the input is 1000, the program prints:

The factors of 1000 are: 1, 2, 4, 5, 8, 10, 20, 25, 40, 50, 100, 125, 200, 250, 500, 1000.

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