

Intermediate 2 Computing

# SOFTWARE DEVELOPMENT

## HOMEWORK 1.1

Name: \_\_\_\_\_

Date due: \_\_\_\_\_

*You will find that Section 1 of the Notes, pages 5 to 20, is helpful in doing this Homework exercise.*

1. Fill in the missing stages in the following list of steps in the software development process:

analysis

\_\_\_\_\_

implementation

\_\_\_\_\_

documentation

evaluation

\_\_\_\_\_

2. What is the purpose of the **analysis** stage?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. What is the purpose of the **evaluation** stage?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. Name **three** items produced as part of the documentation.

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5. Programmers use a variety of methods for describing the program structure. Name **two** of these methods.

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6. There are **three** types of testing that should be done. Name and describe each of these.

Type: \_\_\_\_\_

Description: \_\_\_\_\_

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Type: \_\_\_\_\_

Description: \_\_\_\_\_

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Type: \_\_\_\_\_

Description: \_\_\_\_\_

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7. Name the **three** types of maintenance that might be required.

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## HOMEWORK 1.2

Name: \_\_\_\_\_

Date due: \_\_\_\_\_

*You will find that Section 1 of the Notes, pages 5 to 20, is helpful in doing this Homework exercise.*

1. Fill in the missing stages in the following list of steps in the software development process:

\_\_\_\_\_

design

implementation

testing

\_\_\_\_\_

\_\_\_\_\_

maintenance

2. What is the purpose of the **design** stage?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. What is the purpose of the **testing** stage?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4. Programmers use a variety of methods for describing the program structure. Name and describe **two** of these methods.

Name: \_\_\_\_\_

Description: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Name: \_\_\_\_\_

Description: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

5. Name the **three** types of testing that have to be done to a program.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. There are **three** types of maintenance that might be required. Name and describe each of these.

Type: \_\_\_\_\_

Description: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Type: \_\_\_\_\_

Description: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Type: \_\_\_\_\_

Description: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

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## HOMEWORK 2.1

Name: \_\_\_\_\_

Date due: \_\_\_\_\_

*You will find that Section 2 of the Notes, pages 21 to 33, is helpful in doing this Homework exercise.*

1. What is **machine code**?

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2. Each of the following is either a **high level language** or a **low level language**. Tick the box that correctly describes each.

High    Low

Assembler

Logo

Machine code

Pascal

Visual BASIC

3. What is the purpose of a **translator** program?

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4. There are **two** types of translator program. Name and describe each of these.

Name: \_\_\_\_\_

Description: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Name: \_\_\_\_\_

Description: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. What is a **text editor**?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

6. What is a **macro**?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7. Describe **one** method of creating a macro with which you are familiar.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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## HOMEWORK 3.1

Name: \_\_\_\_\_

Date due: \_\_\_\_\_

*You will find that Section 3 of the Notes, pages 35 to 49, is helpful in doing this Homework exercise.*

- 1. A Visual BASIC form can have a number of different objects on it, including **labels**, **text boxes** and **command buttons**. Describe the purpose of each of these objects.

Label: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Text box: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Command: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- 2. There is a convention that objects in a Visual BASIC program start with a three-letter prefix which identifies the type of object. State the three-letter prefix for each of the following objects:

Label: \_\_\_\_\_

Text box: \_\_\_\_\_

Command: \_\_\_\_\_

3. In the boxes below, draw the icons on the Visual BASIC tool bar used to run a program and to stop it.

run



stop



4. The code for a command button called **Start** in a Visual BASIC program is as follows:

```
Private Sub cmdStart_Click()  
MsgBox "Welcome to VB"  
End Sub
```

What happens when the **Start** button is clicked while the program is running?

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---

5. The code for a command button called **Start** in a Visual BASIC program is as follows:

```
Private Sub cmdStart_Click()  
Print "Welcome to VB"  
End Sub
```

What happens when the **Start** button is clicked while the program is running?

---

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## HOMEWORK 3.2

Name: \_\_\_\_\_

Date due: \_\_\_\_\_

*You will find that Section 3 of the Notes, pages 50 to 61, is helpful in doing this Homework exercise.*

1. In this course, **three** types of Visual BASIC variables will be used. Describe each of these types of variable.

Integer: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Single: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

String: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Write **Integer** or **Single** or **String** next each of the following:

0.456 \_\_\_\_\_

Jones \_\_\_\_\_

-56 \_\_\_\_\_

291 \_\_\_\_\_

Mike \_\_\_\_\_

-17.886 \_\_\_\_\_

3.14 \_\_\_\_\_

R2D2 \_\_\_\_\_

3. A Visual BASIC program includes the line

`Dim number As Integer`

The word **Dim** is an abbreviation. What is the full word?

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Explain the purpose of this line of Visual BASIC code.

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4. A Visual BASIC program has been written to record the results of a class test marked out of 40. The program is tested with the following sets of marks. For each set, state the type of test being done and explain why that type of test should be done.

**Set 1:**            24, 36

Type of test: \_\_\_\_\_

Why it is done: \_\_\_\_\_

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**Set 2:**            0, 40

Type of test: \_\_\_\_\_

Why it is done: \_\_\_\_\_

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**Set 3:**            50, -1

Type of test: \_\_\_\_\_

Why it is done: \_\_\_\_\_

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HOMEWORK 3.3

Name: \_\_\_\_\_

Date due: \_\_\_\_\_

*You will find that Section 3 of the Notes, pages 62 to 83, is helpful in doing this Homework exercise.*

1. In each box, write the symbol used by Visual BASIC for doing the given arithmetic operation:

addition

subtraction

multiplication

division

raising to a power

2. Calculate the value that Visual BASIC gives each of the following expressions:

$20 - 3 * 4 + 1 = \underline{\hspace{2cm}}$

$8 + 16 / 4 = \underline{\hspace{2cm}}$

$5 + 4 ^ 2 = \underline{\hspace{2cm}}$

$6 * 3 / 9 + 1 = \underline{\hspace{2cm}}$

$9 - 3 * 2 + 1 = \underline{\hspace{2cm}}$

$9 - 3 * (2 + 1) = \underline{\hspace{2cm}}$

$(9 - 3) * 2 + 1 = \underline{\hspace{2cm}}$

$9 - (3 * 2) + 1 = \underline{\hspace{2cm}}$

3. Visual BASIC offers a number of mathematical functions. For each of the following, explain what the function does, and give the value of the given expression:

**Function:** Sqr

What it does: \_\_\_\_\_  
\_\_\_\_\_

Sqr(25) = \_\_\_\_\_

**Function:** Int

What it does: \_\_\_\_\_  
\_\_\_\_\_

Int(3.74) = \_\_\_\_\_

**Function:** Round

What it does: \_\_\_\_\_  
\_\_\_\_\_

Round(3.74) = \_\_\_\_\_

4. Visual BASIC offers a number of string functions. For each of the following, explain what the function does:

**Function:** UCase

What it does: \_\_\_\_\_  
\_\_\_\_\_

**Function:** LCase

What it does: \_\_\_\_\_  
\_\_\_\_\_

**Function:** Len

What it does: \_\_\_\_\_  
\_\_\_\_\_

**Function:** Mid\$

What it does: \_\_\_\_\_  
\_\_\_\_\_

**Function:** Asc

What it does: \_\_\_\_\_  
\_\_\_\_\_

**Function:** Chr\$

What it does: \_\_\_\_\_  
\_\_\_\_\_

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## HOMEWORK 4.1

Name: \_\_\_\_\_

Date due: \_\_\_\_\_

*You will find that Section 4 of the Notes, pages 85 to 101, is helpful in doing this Homework exercise.*

1. In each box, write the symbol used by Visual BASIC for:

equal

not equal

less than

greater than

less than or equal

greater than or equal

2. A Visual BASIC form has a text box called **txtInput**, a label box called **lblOutput** and a command button called **cmdStart**. The following code has been entered:

```
Private Sub cmdStart_Click()  
Dim number as Integer  
number = txtInput.Text  
If number < 0 Then lblOutput.Caption = "negative"  
If number = 0 Then lblOutput.Caption = "zero"  
If number > 0 Then lblOutput.Caption = "positive"  
End Sub
```

This has to be tested. Give a set of values to do each of the following types of testing:

Normal \_\_\_\_\_

Boundary \_\_\_\_\_

Exceptional \_\_\_\_\_

3. A Visual BASIC form has a text box called **txtPassword**, a label box called **lblOutput** and a command button called **cmdStart**.

Code has been entered as follows:

```
Private Sub cmdStart_Click()  
Dim password as String  
password = txtPassword.Text  
If password = "OK" Or password = "welcome" Then  
    lblOutput.Caption = "Congratulations!"  
Else  
    lblOutput.Caption = "Tough luck!"  
End If  
End Sub
```

What will appear in the label box when the program is tested with:

welcome \_\_\_\_\_  
ok \_\_\_\_\_  
hello \_\_\_\_\_  
OKwelcome \_\_\_\_\_

4. A Visual BASIC form has a text box called **txtInput**, a label box called **lblOutput** and a command button called **cmdStart**.

Code has to be entered so that if the text box contains a number from 50 to 100 inclusive, the label box will display "PASS". If any other number is entered, the label box will display "FAIL".

Enter the code which will do this task.

```
Private Sub cmdStart_Click()  
Dim number as Single  
number = txtInput.Text
```

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---

---

```
End Sub
```

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## HOMEWORK 4.2

Name: \_\_\_\_\_

Date due: \_\_\_\_\_

*You will find that Section 4 of the Notes, pages 102 to 134, is helpful in doing this Homework exercise.*

1. A Visual BASIC form has a command button called **cmdStart**. The following code has been entered:

```
Private Sub cmdStart_Click()  
    Dim counter as Integer  
    For counter = 1 To 7  
        Print "Hello"  
    Next counter  
End Sub
```

Describe what happens when the program is run and the user clicks on the Start command button.

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2. The line of code

```
For counter = 1 To 7
```

given in Question 1 is changed to

```
For counter = 1 To 100 Step 10
```

Describe what happens when this version of the program is run.

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3. A program uses a FOR loop containing the line

```
PRINT counter
```

Write the **FOR** lines that will display the following numbers:

a) 3, 4, 5, 6 FOR counter = \_\_\_\_\_

b) 1, 3, 5, 7 FOR counter = \_\_\_\_\_

c) 9, 8, 7, 6 FOR counter = \_\_\_\_\_

4. A Visual BASIC form has a command button called **cmdStart**. Code has been entered as follows:

```
Private Sub cmdStart_Click()  
Dim password As String  
Do  
    password = UCase(InputBox("Enter password..."))  
    If password = "OK" Then  
        MsgBox "Enter!"  
    Else  
        MsgBox "Invalid - Try again!"  
    End If  
Loop Until password = "OK"  
End  
End Sub
```

What will appear in the message box when the program is tested with:

welcome \_\_\_\_\_

ok \_\_\_\_\_

OK \_\_\_\_\_

5. State whether a **For/Next** or a **Do/Loop Until** loop is the more suitable for coding each of the following situations:

a) A program which asks for the marks for a class of 20 pupils.  
\_\_\_\_\_

b) A program which pauses until the SPACEBAR is pressed.  
\_\_\_\_\_

c) A program which asks for a number and then displays a countdown from that number to zero.  
\_\_\_\_\_



## Intermediate 2 Computing

# SOFTWARE DEVELOPMENT

## HOMEWORK 5.1

Name: \_\_\_\_\_

Date due: \_\_\_\_\_

*You will find that Section 5 of the Notes, pages 135 to 152, is helpful in doing this Homework exercise.*

A program is required which will take in a student's Standard Grade Computing Studies grade and decide which course, Intermediate 1, Intermediate 2 or Higher is the most appropriate. Standard Grade is issued on a scale of 1 to 7.

1. Write the **pseudocode** for the part of the program which checks that the grade entered is a number between 1 and 7. (You should not need all the lines given!)

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2. Write the Visual BASIC line of code which displays a message box if an invalid grade is entered. The grade is stored in a variable called grade.

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3. Write the Visual BASIC line of code which displays a message box showing "Int 2" when the grade entered is either a 3 or a 4. The grade is stored in a variable called grade.

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4. Explain briefly what each of the following algorithms does:

Input validation

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Finding a maximum

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Finding a minimum

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---

---

Counting occurrences

---

---

---

Linear search

---

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5. An **array** can be used to store variables. Explain what an array is, by using an example.

The values I am going to store in my example are:

---

I am going to create my array using this line of Visual BASIC code:

---

My array works like this:

---

---

---

---

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