

programming assignment

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University of Wales Trinity Saint David

School of Computing

Foundation year

Introduction to Programming M4X01508

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Contents

1: Part A

- What is a variable and why they are important in writing programs?
- Explain why the for-loop can also be referred to as a counting loop and give an example of when you would use it?
- Explain what an array is, what are their features, and give an example of when you would use it?

2: Part B

- Show how variables can contain different types of values by declaring three variables that contain a name, a measure of height (e.g. 1.81cm) and a person's age (e.g. 32). Input these values and display them on the screen.
- Allow the user to enter the dimensions of shapes shown below then calculate the area of the blue shaded part. Note: The triangular area in the centre is empty.
- Write a program that allows the user to enter the price of 5 products into an array. Once all the prices are entered calculate the total price, and then calculate the total price plus 20% VAT.
- Build a fruit machine game which represents the 3 reels of symbols using numbers ranging from 0 to 5. Allow the user to have as many goes as they like (the numbers are chosen randomly each time).

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Part A

Question1: What is a variable and why they are important in writing programs?

Answer: variables plays n important role in programming. Variables are used to store and label the important data. They enable the programmer to write a flexible programme

because it allows the user to use the variables to enter different data rather entering the data directly into the programme.

Question 2: Explain why the for-loop can also be referred to as a counting loop and give an example of when you would use it?

Answer: The for-loop is also referred as a counting loop because it is used with the int that will count from the initial value or no to an higher limit. For loop is a control flow statement, which allows to run the code(programme) repeatedly.

```
#include<stdio.h>
```

```
void main()
```

```
{
```

```
    int i, total=0;
```

```
    printf("The bottom of range:3\n");
```

```
    printf("The top of the range:6\n");
```

```
    for (i = 1; i <= 10; i++)
```

```
    {
```

```
        total = total + i;
```

```
        printf("The sum of the numbers is :%d\n", total);
```

```
    }
```

```
}
```

Question 3: Explain what an array is, what are their features, and give an example of when you would use it?

Answer: Array is known as a variable or data collection, but the all must be the same type of variables or data. All the data in the array can be accessed by an index. Array

would be used to store for example the clothes items and then can be accessed by their position on the index.

Part B

Question 1: Show how variables can contain different types of values by declaring three variables that contain a name, a measure of height (e.g. 1.81cm) and a person's age (e.g. 32). Input these values and display them on the screen.

Answer :

```
#include<stdio.h>
```

```
void main()
```

```
{
```

```
    char myname[25] = { 'r','i','z','w','a','n' };
```

```
    printf("%c", myname);
```

```
}
```

```
#include<stdio.h>
```

```
{
```

```
void main()
```

```
int myage=35;
```

```
printf("I am %d years old",myage);
```

```
}
```

```
#include<stdio.h>
```

```
void main()
```

```
{
```

```
Float myheight=1.83
```

```
Printf("my height is %2fcm",myheight);
```

Question 2: Allow the user to enter the dimensions of shapes shown below then calculate the area of the blue shaded part. Note: The triangular area in the centre is empty.

Answer :

```
#include<stdio.h>
```

```
#define PI 3.142
```

```
void main()
```

```
{  
    float radius;  
    float circle;  
  
    float triangle;  
  
    float shaddedarea,h,b;  
  
    printf("please enter radius:");  
  
    scanf("%f",&radius);  
  
    circle=PI*(radius*radius);  
  
    printf("answer is:%3f/n",circle);  
  
    printf("please enter the value of triangle:");  
  
    scanf("%f",&h);  
  
    printf("please enter the value of triangle b:");  
  
    sacnf("%f",&b);  
  
    triangle=(b*h)/2;  
  
    printf("answer is: %.3f\n",triangle);  
  
    shaddedarea=circle-triangel;  
  
    printf( "shaded area is:%.3f\n",shaddedarea);
```

Question 3: Write a program that allows the user to enter the price of 5 products into an array. Once all the prices are entered calculate the total price, and then calculate the total price plus 20% VAT.

Answer :

```
#include<stdio.h>
```

```
void main()
```

```
{
```

```
float m[5];
```

```
total=0;
```

```
total-vat=0;
```

```
inti;
```

```
for (i=0;i<5;i++)
```

```
{
```

```
printf("please enter the prices of product number %d:",i++);
```

```
scanf("%f",&m[i]);
```

```
}
```

```
for (i=0;i<=5;i++)
```

```
{
```

```
total=total+m[i];
```

```
}
```

```
total-vat=((total*0.2)+total);
```

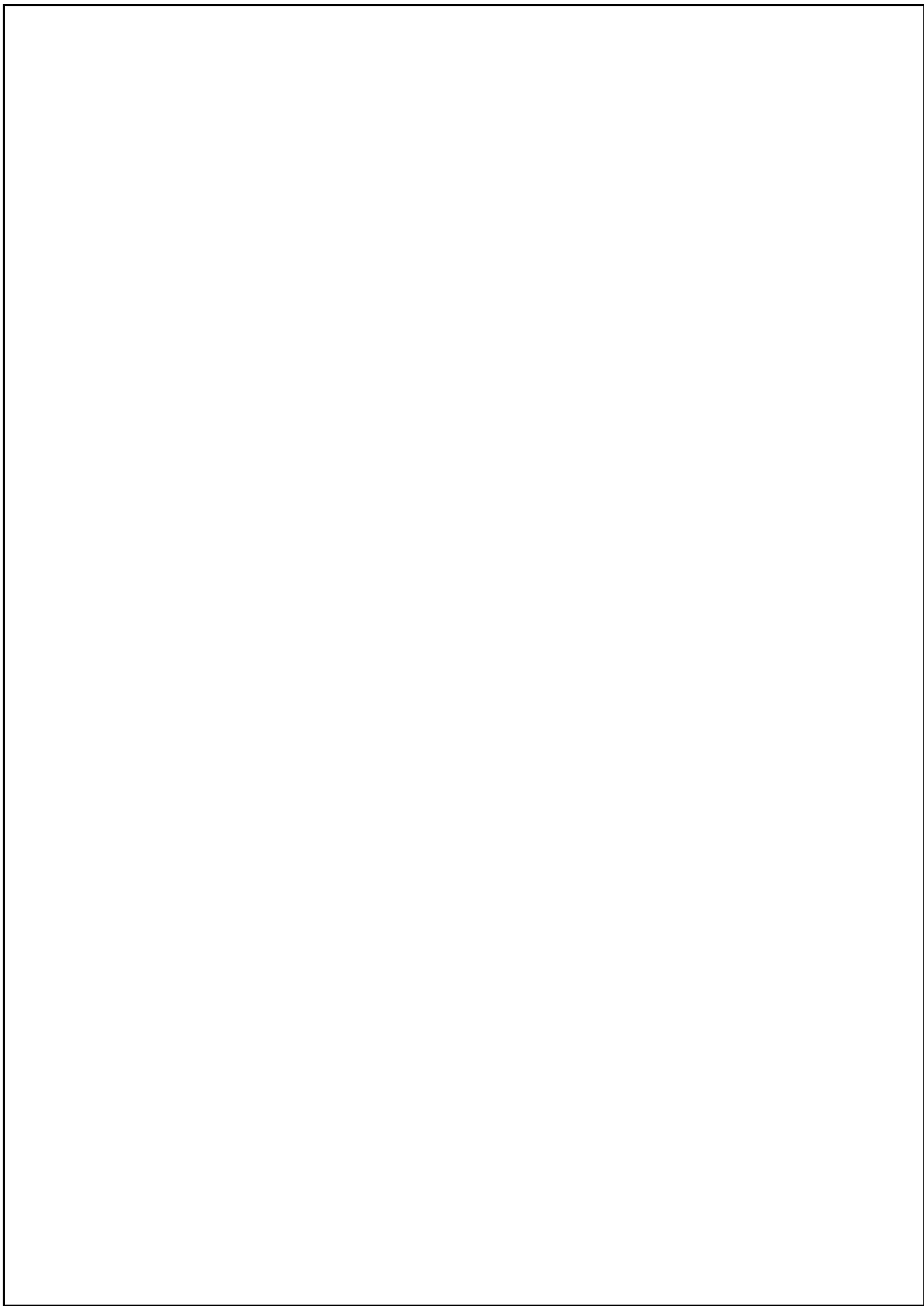
```
printf("total price without vat is %.2f\n",total);
```

```
printf("totalprice with vat is .2f\n",total-vat);
```

```
}
```

Question 4: Build a fruit machine game which represents the 3 reels of symbols using numbers ranging from 0 to 5. Allow the user to have as many goes as they like (the numbers are chosen randomly each time).

Answer :



programming assignment

GRADEMARK REPORT

FINAL GRADE

31 / 100

GENERAL COMMENTS

Instructor

Part A

Variable - Too short. You need to talk about different types, the types of data they hold, naming conventions for variables and so on .4/10

Counting Loops - The main point with a for loop is that the number of iterations is known before the loop commences. Your example is OK, but the first 3 lines are a bit strange and don't seem to have anything to do with the loop. 5/10

Arrays - You've covered the main points here, but you could have stated that arrays start counting from 0 in C and included a code example. 6/10

Part B - For all of these exercises you have not included a breakdown of the problem nor any testing. Please read your assignment briefs carefully.

Exercise 1

Code-Annotation - I'm not sure why you've written 3 different programs. This should all be the same program. You need to validate input, eg the user should not be able to enter minus numbers for age 2.5

Documentation - None provided. 0/5

Exercise 2

Code-Annotation - A reasonable attempt, although one of the scanf's is spelt wrong, and well as triangle in the penultimate line. No validation of inputs 5.5/10

Documentation 0/5

Exercise 3

Code-Annotation - Good overall and have used arrays well. You need to validate the inputs 8/10

Documentation 0/5

Exercise 4 - not submitted

Code-Annotation 0/20

Documentation 0/10

Total: 31%

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