Programming Assignment 4

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Question 1

a) Briefly explain a function in C++ programming.

A function in C++ is a block of code that performs a specific task. It promotes modular programming by allowing code to be reused and organized logically. A function has a name, a return type, parameters, and a body that contains the code to execute when the function is called.

b)

i. What is a function prototype in programming?

A function prototype is a declaration of a function that tells the compiler about the function name, return type, and parameters before its actual definition. It helps in ensuring correct function usage.

ii. Function prototype for Area_of_square:

```
double Area_of_square (double length);
```

c) Function definition for Area_of_square:

```
#include <iostream>
using namespace std;

double Area_of_square(double length) {
 return length * length;
}

int main() {
 double length;
 cout << "Enter the length of the square: ";
 cin >> length;
 double area = Area_of_square(length);
 cout << "Area of the square is: " << area << endl;
 return 0;
```

```
}
```

Question 2

a. Write the syntax for the following loops:

- i. While loop:

```
while (condition) {
   // statements
}
```

- ii. Do-while loop:

```
do {
   // statements
} while (condition);
```

- iii. For loop:

```
for (initialization; condition; increment) {
   // statements
}
```

- iv. Switch statement:

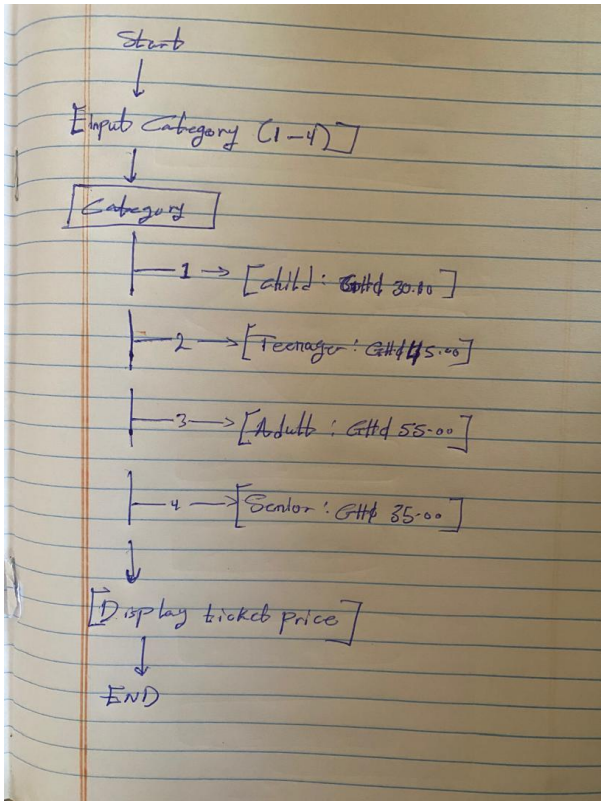
```
switch (expression) {
   case value1:
      // code
      break;
   default:
      // code
}
```

- v. Nested loop (e.g., nested for loop):

```
for (int i = 0; i < n; i++) {
   for (int j = 0; j < m; j++) {
      // statements
   }
}
```

b) Viewer category to ticket price module:

- i. Flowchart



- ii. C++ program using switch statement:

```
#include <iostream>
using namespace std;

int main() {
   int category;
   cout << "Enter viewer category (1=Child, 2=Teenager, 3=Adult,
4=Senior): ";
   cin >> category;

   switch (category) {
      case 1:
         cout << "Ticket price: GHS 30.00" << endl;
```

```
            break;
        case 2:
            cout << "Ticket price: GHS 45.00" << endl;
            break;
        case 3:
            cout << "Ticket price: GHS 55.00" << endl;
            break;
        case 4:
            cout << "Ticket price: GHS 35.00" << endl;
            break;
        default:
            cout << "Invalid category entered." << endl;
    }
    return 0;
}
```
