SIT102 – Introduction to Programming

Answers for 4.1P Name Tester

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Question 1: Describe the three key building blocks of structured programming: sequence, selection, and repetition.

Sequence: Sequences can be grouped together in blocks ({ ... } in C++)
In sequential flow of control, the statements of a program are executed from top to bottom in order in which they are written including method calls. During execution, the control is transferred to the method called.
Selection: used for decisions, branching -- choosing between 2 or more alternative paths. In C++, these are the types of selection statements: if. if/else. switch.
Selection (branching) Statements allow you to select a branch to be followed
Repetition: The other type of important programming control structure is a repetition statement. A repetition statement is used to repeat a group (block) of programming instructions. Most beginning programmers have a harder time using repetition statements than they have at using selection statements.

Question 2: Describe the Boolean operators **and**, **or**, and **not**. With an aid of some code examples to elaborate your opinions on how these can be used to help create meaningful test conditions.

And : is true when both A and B are true. If one of them is not true, it is false   Eg(value<=10)and(value>=10).   **Or: The OR operator is used in a boolean expression to check that there is at least one true. If both sides are true, the entire expression is true. If just one side is true, the entire expression is true. If both sides are false, the entire expression is false**   Eg(value>10)or(value<10)   **Not: If A is true, then Not(A) is false, and my understanding is that they will have opposite values after passing Not.**   **Eg If A value is true, then not A is false.**

Question 3: Describe **two** selection statements in C++. Elaborate how they achieve selection behaviour in a program. Provide your answers with a simple code example respectively.

A case or switch selection statement can be used to switch to a code that has a matching   **Example**   switch(option)   {   **case 1:**

```
test_user_details();
 break;
}default
```

The if statement lets us choose whether to run a block of code. This will select either the first instruction in the block as the next statement (if the condition is true) or the instruction that follows the block (if the condition is false)

```
if ( to_lowercase(name) == "yi")
   {
   write_line("yizheng he is a student");
   write_line("He like learning code");
   }
   else  if (to_lowercase(name) == "tom")
   {
   write_line("Hello tom");
   }
```

Question 4: Describe the **two** repetition statements covered this week. Elaborate how they achieve repetition behaviour in a program. Provide your answers with a simple code example respectively.

The while loop is a statement that allows you to repeat the code 0 to many times and it is a pre-test loop

```
while( guess !=target )
    {
      write("Enter guess: ");
      line =read_line();

      guess =convert_to_integer(line);
      if ( guess<target )
      {
        write_line("Sorry, my number is greater than" + to_string(guess));
      }
      else if ( guess>target )
      {
        write_line("No, my number is less than"+ to_string(guess));
      }
    }
    write_line("Wow...you got it. my number was"+ to_string(target));
}
```

The do while loop is another option for coding repetition in your programs. This repeat and it is a post-test loop

```
do
    {
    write("Choose option: ");
```

```
    line =read_line();
    option= convert_to_integer(line);



    switch(option)
     {
        case 1:
            user_details();
            break;
        case 2:
            play_guess_that_number();
            break;
        case 3:
            write_line("See you soon");
            break;
        default:
          write_line("Please enter an option from the menu");
     }
    } while(option!=3);
}
```

End of questions (4)