AP® Computer Science AB
2002 Sample Student Responses

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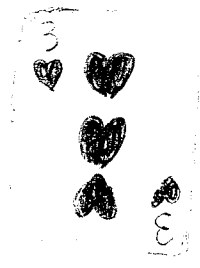
(a) You will write free function `AppendQueue`, which is described as follows. `AppendQueue` should remove all the cards from the parameter `source` and add them to the parameter `destination` in the same order.

Complete function `AppendQueue` below.

```
void AppendQueue(apqueue<Card> & destination,
                 apqueue<Card> & source)
// postcondition: all cards have been removed from source
//                and added to destination in the same order
{
   Card temp;

   while (!source.isEmpty())
   {
      source.dequeue(temp);
      destination.enqueue(temp);
   }
}
```



Complete function `OneRound` below.

```
void OneRound(apqueue<Card> & pile1,
              apqueue<Card> & pile2)
// precondition:  pile1.length() > 0;  pile2.length() > 0
// postcondition: pile1 and pile2 have been updated according to the
//                rules of the game
{
   Card card1, card2;
   apqueue<Card> discard;
   do
   {
      pile1.dequeue(card1);
      pile2.dequeue(card2);

      discard.enqueue(card1);
      discard.enqueue(card2);
   } while (!pile1.isEmpty() && !pile2.isEmpty() && card1 == card2);
   if (card1.Value > card2.Value)
      AppendQueue(pile1, discard);
   else if (card2.Value > card1.Value)
      AppendQueue(pile2, discard);
   else if (pile1.isEmpty() && !pile2.isEmpty())
      AppendQueue(pile2, discard);
   else if (pile2.isEmpty() && !pile1.isEmpty())
      AppendQueue(pile1, discard);
}
```

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AB 2 B

(a) You will write free function `AppendQueue`, which is described as follows. `AppendQueue` should remove all the cards from the parameter `source` and add them to the parameter `destination` in the same order.

Complete function `AppendQueue` below.

```
void AppendQueue(apqueue<Card> & destination,
                 apqueue<Card> & source)
// postcondition: all cards have been removed from source
//                and added to destination in the same order
{
    Card moveCard;

    while (!source.isEmpty()) {
        source.dequeue(moveCard);
        destination.enqueue(moveCard);
    }

}
```

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Complete function OneRound below.

```
void OneRound(apqueue<Card> & pile1,
              apqueue<Card> & pile2)
// precondition:  pile1.length() > 0;  pile2.length() > 0
// postcondition: pile1 and pile2 have been updated according to the
//                rules of the game
{
    int one, two;
    Card first, second;
    apqueue<Card>  discard;

    if (pile1.isEmpty() && pile2.isEmpty())
        return;
    while (!pile1.isEmpty() || !pile2.isEmpty()) {  // some card in either
       if (pile1.isEmpty()){
           AppendQueue(pile2, discard);
           return;
       }
       if (pile2.isEmpty()){
          AppendQueue(pile1, discard);
          return;
       }
       pile1.dequeue(first);
       pile2.dequeue(second);

       if (first.value() == second.value()){
           discard.enqueue(first);
           discard.enqueue(second);
       }
       else if (first.value() > second.value()){
           AppendQueue(pile1, discard);
           pile1.enqueue(first);
           pile1.enqueue(second);
           return;
       }
       else {
          AppendQueue(pile2, discard);
          pile2.enqueue(first);
          pile2.enqueue(second);
          return;
       }
    } // end while
    return; // at this pt, both queues are empty
} // end fxn
```

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AB 2 C

(a) You will write free function `AppendQueue`, which is described as follows. `AppendQueue` should remove all the cards from the parameter `source` and add them to the parameter `destination` in the same order.

Complete function `AppendQueue` below.

```
void AppendQueue(apqueue<Card> & destination,
                 apqueue<Card> & source)
// postcondition: all cards have been removed from source
//                and added to destination in the same order
{  Card temp;

   While(!(source.IsEmpty()))
    {
      source.dequeue(temp);
      destination.enqueue(temp);

    }

}
```

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Complete function `OneRound` below.

```
void OneRound(apqueue<Card> & pile1,
              apqueue<Card> & pile2)
// precondition:  pile1.length() > 0;  pile2.length() > 0
// postcondition: pile1 and pile2 have been updated according to the
//                rules of the game

{Card temp1, temp2, temp3;
 apqueue<Card> discard;

 while ((pile1.length() != 0) || (pile2.length() != 0))
 {

     pile1.dequeue(temp1);
     pile2.dequeue(temp2);
     if (card.temp1.value == card.temp2.value)
      {
         discard.enqueue(temp1);
         discard.enqueue(temp2);
      }
     else if (card.temp1.value > card.temp2.value)
      {
        pile1.enqueue(temp1);
        pile1.enqueue(temp2);
      }
     else
      {
        pile2.enqueue(temp1);
        pile2.enqueue(temp2);
      }
 }
```

AppendQueue(pile1, discard);

AppendQueue(pile2, discard);

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