

XML1

```
WITH UserSubscriptions AS (
  SELECT
    ua.UserID,
    xmlagg(
      xmlelement(name "Subscription",
        xmlforest(
          s.SubscriptionID AS "SubscriptionID",
          s.SubscriptionStartDate AS "StartDate",
          s.SubscriptionEndDate AS "EndDate",
          s.SubscriptionAmount AS "Amount"
        )
      )
    ) AS SubscriptionsXML
  FROM UserAccount ua
  JOIN Subscription s ON ua.UserID = s.UserID
  GROUP BY ua.UserID
),
UserPayments AS (
  SELECT
    pm.UserID,
    xmlagg(
      xmlelement(name "PaymentMethod",
        xmlforest(
          pm.PaymentMethodID AS "PaymentMethodID",
          pm.Type AS "Type"
        ),
        xmlelement(name "Details",
          xmlforest(
            (pm.Details->'card_info'>>'card_number') AS "CardNumber",
            (pm.Details->'card_info'>>'expiry_date') AS "ExpiryDate"
          )
        )
      )
    ) AS PaymentsXML
  FROM PaymentMethod pm
  GROUP BY pm.UserID
),
UserCharacters AS (
  SELECT
    c.UserID,
    xmlagg(
      xmlelement(name "Character",
        xmlforest(
          c.CharacterID AS "CharacterID",
          c.Name AS "Name",
          c.Realm AS "Realm",
          c.Race AS "Race",
          c.Class AS "Class",
          c.Strength AS "Strength"
        ),
        (SELECT xmlelement(name "Notifications", xmlagg(n.Details))
          FROM CharacterNotification cn
          JOIN Notification n ON cn.NotificationID = n.NotificationID
          WHERE cn.CharacterID = c.CharacterID)
      )
    ) AS CharactersXML
  FROM Character c
  GROUP BY c.UserID
)
SELECT xmlserialize(DOCUMENT
  xmlelement(name "Users",
    (SELECT xmlagg(
      xmlelement(name "User",
        xmlattributes(
          ua.UserID AS "UserID",
          ua.Email AS "Email",
          (SELECT COUNT(*) FROM Subscription s WHERE s.UserID = ua.UserID) AS "SubscriptionCount",
          (SELECT COUNT(*) FROM PaymentMethod pm WHERE pm.UserID = ua.UserID) AS "PaymentMethodCount"
        ),
        (SELECT SubscriptionsXML FROM UserSubscriptions us WHERE us.UserID = ua.UserID),
        (SELECT PaymentsXML FROM UserPayments up WHERE up.UserID = ua.UserID),
        (SELECT CharactersXML FROM UserCharacters uc WHERE uc.UserID = ua.UserID)
      )
    ) FROM UserAccount ua)
  ) AS text);
```

Output sample:

```
<Users>
  <User UserID="5fd86c55-ea52-40d5-8b93-35c080d6801d" Email="smichael@example.net" SubscriptionCount="1" PaymentMethodCount="1">
    <Subscription>
      <SubscriptionID>1</SubscriptionID>
      <StartDate>2023-10-28T12:34:16.900748</StartDate>
      <EndDate>2024-10-20T07:46:37.73276</EndDate>
      <Amount>63</Amount>
    </Subscription>
    <PaymentMethod>
      <PaymentMethodID>1</PaymentMethodID>
      <Type>Mastercard</Type>
      <Details>
        <CardNumber>566335266029</CardNumber>
        <ExpiryDate>01/34</ExpiryDate>
      </Details>
    </PaymentMethod>
    <Character>
      <CharacterID>4b9234e9-ef4e-453e-a2b9-064b0563ff29</CharacterID>
      <Name>nicholas48</Name>
      <Realm>Realm3</Realm>
      <Race>Race2</Race>
      <Class>Class1</Class>
      <Strength>5</Strength>
      <Notifications>
        <notification>
          <title>Military administration difference book.</title>
          <message>Show face information indeed. Expect statement too give fine catch people. Soon quite important.</message>
          <event name="among">
            <date>1980-03-04</date>
            <details>Policy board purpose reflect.</details>
          </event>
        </notification>
      </Notifications>
    </Character>
  </User>
```

JSON1

```
WITH UserSubscriptions AS (
  SELECT
    ua.UserID,
    ua.Email,
    json_agg(
      json_build_object(
        'SubscriptionID', s.SubscriptionID,
        'StartDate', s.SubscriptionStartDate,
        'EndDate', s.SubscriptionEndDate,
        'Amount', s.SubscriptionAmount
      )
    ) AS Subscriptions
  FROM useraccount ua
  JOIN Subscription s ON ua.UserID = s.UserID
  GROUP BY ua.UserID
),
UserPayments AS (
  SELECT
    ua.UserID,
    json_agg(
      json_build_object(
        'PaymentMethodID', pm.PaymentMethodID,
        'Type', pm.Type,
        'Details', pm.Details
      )
    ) AS PaymentMethods
  FROM useraccount ua
  JOIN PaymentMethod pm ON ua.UserID = pm.UserID
  GROUP BY ua.UserID
),
UserCharacters AS (
  SELECT
    ua.UserID,
    json_agg(
      json_build_object(
        'CharacterID', c.CharacterID,
        'Name', c.Name,
        'Realm', c.Realm,
        'Race', c.Race,
        'Class', c.Class,
        'Strength', c.Strength,
        'LatestNotification', (
          SELECT json_build_object(
            'NotificationID', n.NotificationID,
            'ExpansionName', (xpath('/notification/expansionName/text()', n.Details))[1]::text,
            'Detail', (xpath('/notification/detail/text()', n.Details))[1]::text
          )
        )
      )
    ) AS Characters
  FROM useraccount ua
  JOIN Character c ON ua.UserID = c.UserID
  GROUP BY ua.UserID
)
SELECT json_build_object(
  'UserID', ua.UserID,
  'Email', ua.Email,
  'Subscriptions', us.Subscriptions,
  'PaymentMethods', up.PaymentMethods,
  'Characters', uc.Characters
)
FROM useraccount ua
LEFT JOIN UserSubscriptions us ON ua.UserID = us.UserID
LEFT JOIN UserPayments up ON ua.UserID = up.UserID
LEFT JOIN UserCharacters uc ON ua.UserID = uc.UserID;
```

Output sample:

```
[
  {
    "UserID": "00b05428-d8bc-45f6-b87c-7b6bce66845d",
    "Email": "icook@example.net",
    "Subscriptions": [
      {
        "SubscriptionID": 943,
        "StartDate": "2023-06-13T21:33:19.249055",
        "EndDate": "2025-01-01T13:33:15.474",
        "Amount": 33
      }
    ],
    "PaymentMethods": [
      {
        "PaymentMethodID": 943,
        "Type": "Discover",
        "Details": {
          "card_info": {
            "card_number": "503869937964",
            "expiry_date": "06/26",
            "holder_name": "Mrs. Sarah Coleman"
          }
        },
        "transactions": [
          29,
          96,
          61
        ]
      }
    ],
    "Characters": [
      {
        "CharacterID": "c2e31fef-76ed-4d6b-87f0-a82d2dd43614",
        "Name": "nathanieltaylor",
        "Realm": "Realm3",
        "Race": "Race1",
        "Class": "Class3",
        "Strength": 60,
        "LatestNotification": {
          "NotificationID": 943,
          "ExpansionName": null,
          "Detail": null
        }
      }
    ]
  }
]
```

XML2

```
WITH CharacterInfo AS (
  SELECT
    c.CharacterID,
    c.Name AS CharacterName,
    c.Realm,
    c.Race,
    xmlelement(name "Character",
      xmlattributes(
        c.CharacterID AS "CharacterID",
        c.Name AS "Name",
        c.Realm AS "Realm",
        c.Race AS "Race"
      ),
    ),
    xmlelement(name "Selfies",
      (SELECT xmlagg(
        xmlelement(name "Selfie",
          xmlattributes(
            cs.SelfID AS "SelfID",
            cs.ImageURL AS "ImageURL",
            cs.CaptureDate AS "CaptureDate"
          )
        )
      )
    ) FROM CharacterSelfie cs WHERE cs.CharacterID = c.CharacterID
  ),
  xmlelement(name "Notifications",
    (SELECT xmlagg(
      xmlelement(name "Notification",
        xmlattributes(
          cn.NotificationID AS "NotificationID",
          n.ExpansionName AS "ExpansionName"
        ),
        xmlelement(name "Details", n.Details)
      )
    )
  ) FROM CharacterNotification cn JOIN Notification n ON cn.NotificationID = n.NotificationID WHERE cn.CharacterID =
c.CharacterID
),
  (SELECT xmlelement(name "PaymentMethods",|
    xmlagg(
      xmlelement(name "PaymentMethod",
        xmlforest(
          pm.PaymentMethodID AS "PaymentMethodID",
          pm.Type AS "Type"
        ),
        xmlelement(name "Details", pm.Details)
      )
    )
  ) FROM PaymentMethod pm WHERE pm.UserID = (SELECT UserID FROM Character WHERE CharacterID =
c.CharacterID) GROUP BY pm.UserID
) AS CharacterXML
FROM Character c
),
AggregatedCharacters AS (
  SELECT xmlagg(CharacterXML) AS Characters
  FROM CharacterInfo
)
SELECT xmlelement(name "CharactersRoot", (SELECT Characters FROM AggregatedCharacters)) AS FinalOutput;
```

Output sample:

```
<CharactersRoot>
  <Character CharacterID="4b9234e9-ef4e-453e-a2b9-064b0563ff29" Name="nicholas48" Realm="Realm3" Race="Race2">
    <Selfies>
      <Selfie SelfID="1" ImageURL="https://picsum.photos/152/930" CaptureDate="2023-10-07T17:38:09.501302"/>
    </Selfies>
    <Notifications>
      <Notification NotificationID="1" ExpansionName="car">
        <Details>
          <notification>
            <title>Military administration difference book.</title>
            <message>Show face information indeed. Expect statement too give fine catch people. Soon quite important.</message>
            <event name="among">
              <date>1980-03-04</date>
              <details>Policy board purpose reflect.</details>
            </event>
          </notification>
        </Details>
      </Notification>
    </Notifications>
    <PaymentMethods>
      <PaymentMethod>
        <PaymentMethodID>1</PaymentMethodID>
        <Type>Mastercard</Type>
        <Details>{"card_info": {"card_number": "8643", "expiry_date": "01/34", "holder_name": "Brian"}, "transactions": [14, 56, 0]}</Details>
      </PaymentMethod>
    </PaymentMethods>
  </Character>
```

JSON2

```
WITH CharacterSelfies AS (
  SELECT
    cs.CharacterID,
    json_agg(
      json_build_object(
        'SelfieID', cs.SelfieID,
        'ImageURL', cs.ImageURL,
        'CaptureDate', cs.CaptureDate
      )
    ) AS Selfies
  FROM CharacterSelfie cs
  GROUP BY cs.CharacterID
),
CharacterNotifications AS (
  SELECT
    cn.CharacterID,
    json_agg(
      json_build_object(
        'NotificationID', n.NotificationID,
        'Detail', n.Details
      )
    ) AS LatestNotification
  FROM Notification n
  JOIN CharacterNotification cn ON n.NotificationID = cn.NotificationID
  GROUP BY cn.CharacterID
),
CharacterDetails AS (
  SELECT
    c.UserID,
    json_agg(
      json_build_object(
        'CharacterID', c.CharacterID,
        'CharacterInfo', json_build_array(
          json_build_object(
            'Name', c.Name,
            'Realm', c.Realm,
            'Race', c.Race,
            'Class', c.Class,
            'Strength', c.Strength,
            'Selfies', COALESCE(cs.Selfies, '[]'),
            'LatestNotification', COALESCE(cn.LatestNotification, json_build_object())
          )
        )
      )
    )
  FROM Character c
  LEFT JOIN CharacterSelfies cs ON c.CharacterID = cs.CharacterID
  LEFT JOIN CharacterNotifications cn ON c.CharacterID = cn.CharacterID
  GROUP BY c.UserID
),
UserDetails AS (
  SELECT
    ua.UserID,
    ua.Email,
    ua.Age,
    ua.Height,
    ua.Weight,
    COALESCE(cd.Characters, '[]'::json) AS Characters
  FROM UserAccount ua
  LEFT JOIN CharacterDetails cd ON ua.UserID = cd.UserID
)
SELECT json_build_object(
  'UserID', ud.UserID,
  'Email', ud.Email,
  'Age', ud.Age,
  'Height', ud.Height,
  'Weight', ud.Weight,
  'Characters', ud.Characters
) FROM UserDetails ud;
```

Output sample:

```
[
  {
    "UserID": "000a13d5-99c7-471c-ac2e-a0fc812d2727",
    "Email": "fisherjustin@example.org",
    "Age": 68,
    "Height": 5.09,
    "Weight": 4.13,
    "Characters": [
      {
        "CharacterID": "5cbcb2c4a-0451-4011-bd40-71d76bc8b90c",
        "CharacterInfo": [
          {
            "Name": "chandlernicole",
            "Realm": "Realm1",
            "Race": "Race1",
            "Class": "Class1",
            "Strength": 58,
            "Selfies": [
              {
                "SelfieID": 339,
                "ImageURL": "https://dummyimage.com/729x402",
                "CaptureDate": "2023-05-10T20:13:40.426282"
              }
            ]
          }
        ],
        "LatestNotification": [
          {
            "NotificationID": 339,
            "Detail": "<notification>
              <title>Wear three woman anything concern difficult.</title>
              <message>Try most space traditional. Agreement kind position gas watch main.</message>
              <event name='book'>
              <date>1971-08-26</date>
              <details>Near third pretty company spend occur card under.</details>
            </event>
            </notification>"
          }
        ]
      }
    ]
  }
]
```